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Studio setups

Backdrops, lighting and cameras explained

MoCap & Kinect

Create motion-capture sequences with affordable technology

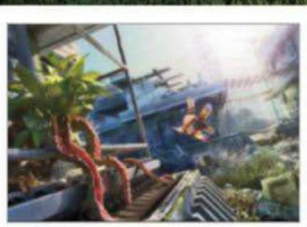
36 PAGES OF TUTORIALS INSIDE

MASTER ARCH VIS

Build a residential property from the ground up with the first of our three-part guide

Rig in modo 601

Artist Richard Yot talks through Luxology's latest tools for animation



Simon Blanc

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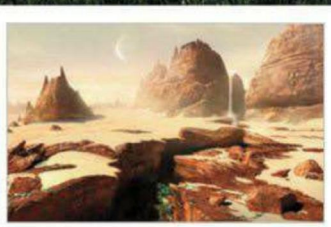

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03
Meet modo.
Luxology®

Master arch vis

Turn to page 46 for the tutorial!

Pawel Podwojewski is the artist behind the beautiful building on our cover this issue. His work represents some of the top talent we have working in the arch-vis industry today. What's more, if it's inspired you to master arch vis, head on over to page 46. Here you'll find the first of a three-part guide written by Lech Sokolowski.

Artist info

Pawel Podwojewski

Personal portfolio site
www.motyw.org

Country Poland

Software used
3ds Max, V-Ray, Photoshop

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Welcome

to the magazine and 116 pages of amazing 3D

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1. **116 pages of creative inspiration**
2. Behind-the-scenes guides to images and fantastic artwork
3. **A CD packed full of creative goodness**
4. Interviews with inspirational artists
5. **Tips for studying 3D or getting work in the industry**
6. The chance to see your art in the mag!

Ahoy there and welcome to 3D Artist! Influenced by our in-depth article on Aardman and Sony's film *The Pirates!*, I've decided to switch to seafarin' speak this issue. The movie is a mixture of stop-motion and CGi animation techniques, and you can read all about it on page 28.

All this buccaneering business also prompted discussions of best beard styles in the office. Turns out the Anchor, French Fork and Sparrow are firm favourites on the 3DA team. If you too are a fan of facial hair, turn to page 80 where Andrzej Kuziola explains how to sculpt one in ZBrush.

Yarrrr, me hearties!

Sarah Slee, Editor

This issue's team of expert artists...

Lech Sokolowski

We're embarking on a house build with Lech this issue. In the first of a three-part guide, he explains how to work from 2D plans

Richard Yot

A regular on the expert panel, Richard is all about animation this month. He uses modo 601 to bring life to his characters

Wojciech Portnicki

Wojciech is here to share some of his techniques for photoreal renderings. Check out his awesome pen on p54

Andrzej Kuziola

Hone your sculpting skills and produce the finest beard on the seven seas with the help of Andrzej's six-step tutorial

Michael Burns

Michael is the man responsible for diving behind the scenes of sci-fi film *John Carter*. Check out what he has to say on p104

Ross Board

Ross has rustled up a Kinect/mocap Masterclass for us this month. He's also sniffed out a few tasty 3D industry news bites

Paul Hatton

Studio setups are the focus of this issue's Back to Basics. Learn how to set up lighting, backdrops and camera angles

Craig A Clark

If you're looking for LightWave love, turn to the Workshop section where Craig explains ambient occlusion rendering

Chris McMahon

Mocap in films and videogames is on McMahon's mind this month. He chats to industry experts for their take on the tech

Paul Champion

NCCA demonstrator Paul has taken time out to test some Maya training. Is it worth the money? All is revealed on p95

James Morris

Our tech guru James is back to put Workstation Specialists' latest hardware release through its paces

Duncan Evans

The man Evans aka The Judge returns to give his verdict on some software and hardware. Read his thoughts on p94

Sign up, share your art and chat to other artists at www.3dartistonline.com

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3DArtist

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Richmond House, 33 Richmond Hill
Bournemouth, Dorset BH2 6EZ
☎ +44 (0) 1202 586200
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Printing & Distribution
Printed by William Gibbons & Sons Ltd, 26 Planetary Road, Willenhall, West Midlands, WV13 3XT

Distributed in the UK & Eire by Seymour Distribution, 2 East Poultry Avenue, London EC1A 9PT ☎ 020 7429 4000

Distributed in Australia by Gordon & Gotch, Equinox Centre, 18 Rodborough Road, Frenchs Forest NSW 2086 ☎ +61 2 9972 8800

Distributed to the rest of the world by Marketforce, Blue Fin Building, 110 Southwark Street, London SE1 0SU ☎ 020 3148 8105

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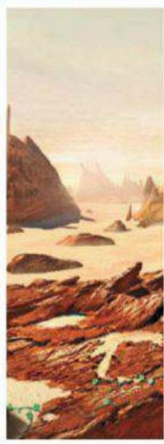

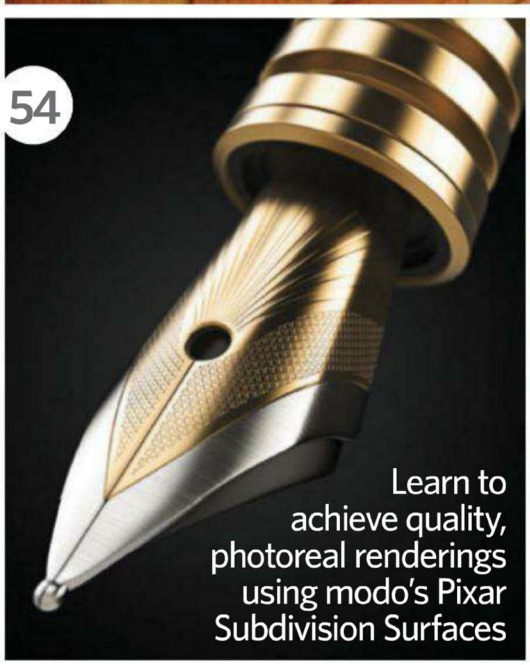

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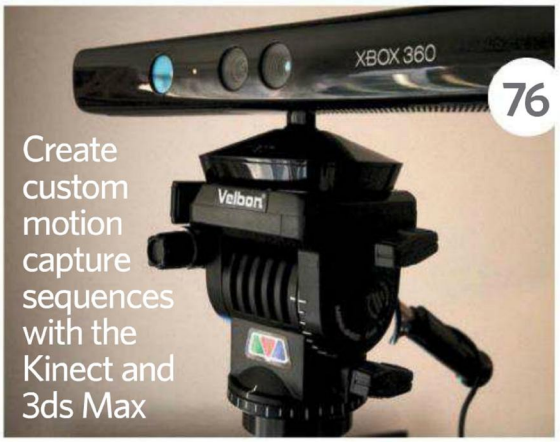

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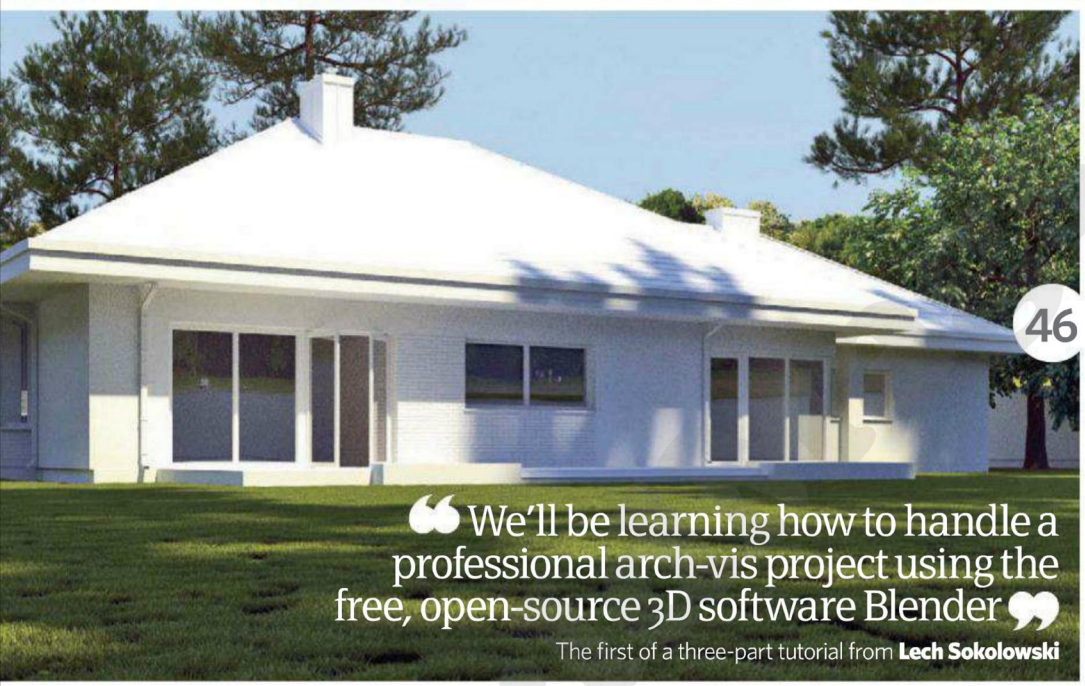

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"We'll be learning how to handle a professional arch-vis project using the free, open-source 3D software Blender"

The first of a three-part tutorial from **Lech Sokolowski**

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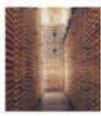

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On the Disc

- 40+ minutes of video training
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- Assets from 3DOcean

Turn to page 112 for the complete list of the disc's contents

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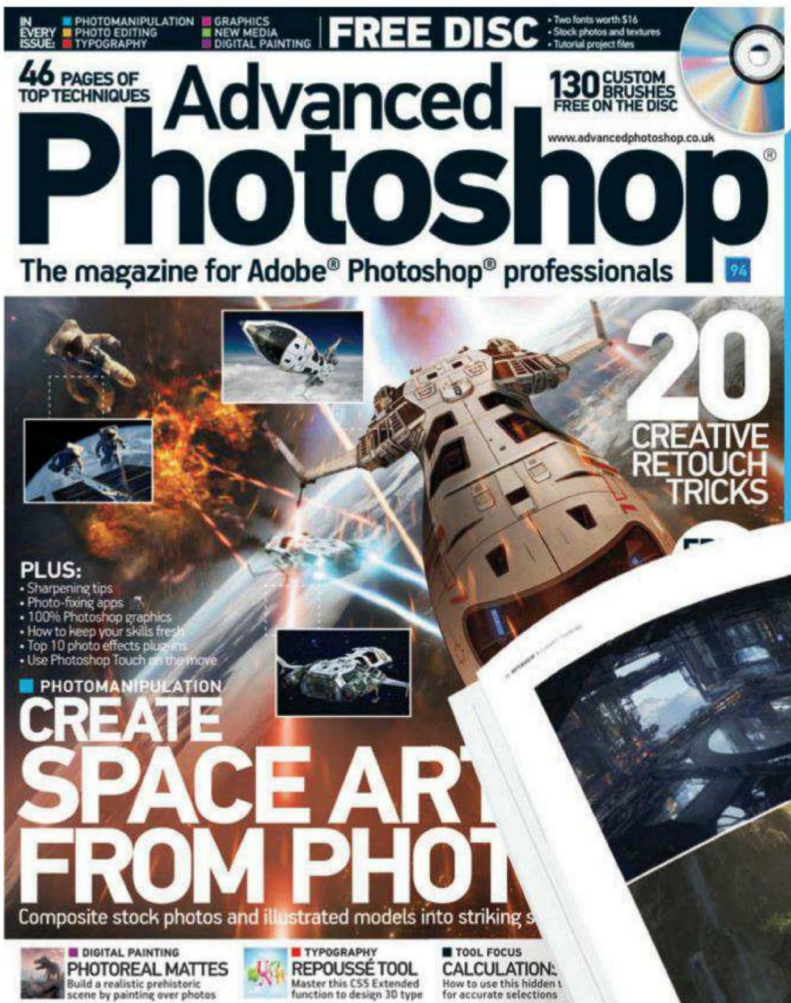
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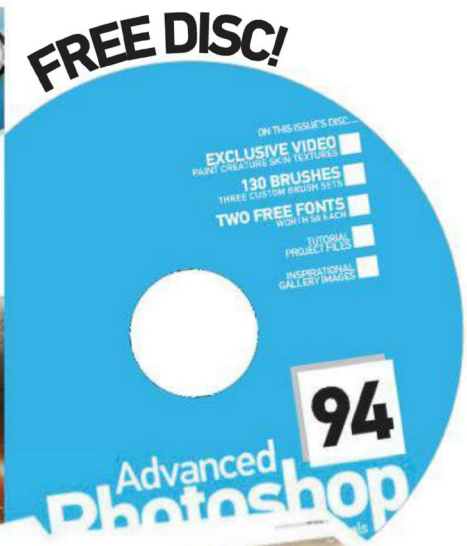

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WELCOME TO THE GALLERY

Nine pages of great artwork from the 3D community

Images we love!

This was inspired by a sketch of mine. When modelling it in 3D I focused more on the tree than the barnacle-type structure. I wanted it to feel more stylised and animated, with the slightly whimsical feeling of a Dr Seuss illustration **David Christopher Cole,** *Tree House*, 2011

Featured artists

David Christopher Cole

A lovely, whimsical scene based on a real-life sketch and a bit of Dr Seuss

Philippe Ringuette-Angrignon

Philippe's stunning scene was created in Softimage but inspired by his peers

Filip Novy

Make no mistake, this lady is fierce. She's also beautiful – excellent work, Filip

Mikael Engzell

Mikael takes a step back in time to the Seventies with a sci-fi twist. Let's join him

Jian Xu

Jian's really captured the personality of his subject. Fantastic pose too

Daniel Gosav

A sleek, sophisticated vehicle influenced by the legendary Syd Mead, realised in 3D

Adi R Indra G

Adi's *Red in Black* lounge area offers a light, airy and lived-in look for its viewers

Get your artwork featured in these pages

Simply send it to the **3D Artist** Gallery. Here's how...

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3. Tell us about them!

Have an image you feel passionate about? Drop editorial an email at **sarah.slee@imagine-publishing.co.uk**.

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You'll be missing out on a thriving 3D community, but if you'd rather submit your work by email or post, here's how. Make sure your image is at least 3,000 pixels on the longest side, save it as a maximum quality JPEG or zip it up as a TIFF and email it to the address below. Please include your contact details! If you've created a Pixar-beating animation and want to see that featured on the cover CD, then save it onto a CD and post it to us. You can also send your images on CD. The addresses are:

sarah.slee@imagine-publishing.co.uk

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Comment on more great 3D art...

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Create your gallery today: www.3dartistonline.com

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Artist info

Philippe Ringuette-Angrignon

Personal portfolio site
http://phil-ra.cghub.com
Country Canada
Software used
Softimage, GIMP

Work in progress...

"I had been working at Ubisoft Montreal for a few months and found myself quite motivated [by] the projects I was seeing being developed at the time, and the talented people I worked with. It made me want to push my art further than in the past, so I got to work at it in my spare time!" **Philippe Ringuette-Angrignon,** *Tower, 2011*

The team Loves

"I love how this scene gives a snapshot of the environment beyond, leaving you to ponder what else is out there"
Lynette News Editor

WorldMags.net

The team Loves

This is one feisty femme-fatale! A great level of detail has been applied, giving the image almost a Baroque battle scene quality and leaving the viewer in awe

Lynette News Editor

Artist info

Filip Novy

Personal portfolio site
filda.cgsociety.org/gallery

Country Czech Republic

Software used
3ds Max, mental ray, ZBrush, Photoshop, Hair Farm

Work in progress...

I created this image for the pure love of 3D, and I also always wanted to create something like this. Work on *Lady van Reuzel* was the biggest challenge I've ever faced in my personal work, and I have to say I really enjoyed it! **Filip Novy,** *Lady van Reuzel*, 2012

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The team Loves

"I love the overall colour and warmth of the scene. It's certainly true to its retro sci-fi roots – it feels like we've stepped into the Seventies!"

Sarah Editor

"I've always been a big fan of old science-fiction movies and the art of Ron Cobb, so when I got some spare time I decided to combine the two influences to produce a retro sci-fi interior scene" **Mikael Engzell,** *Harvester 03,* 2011

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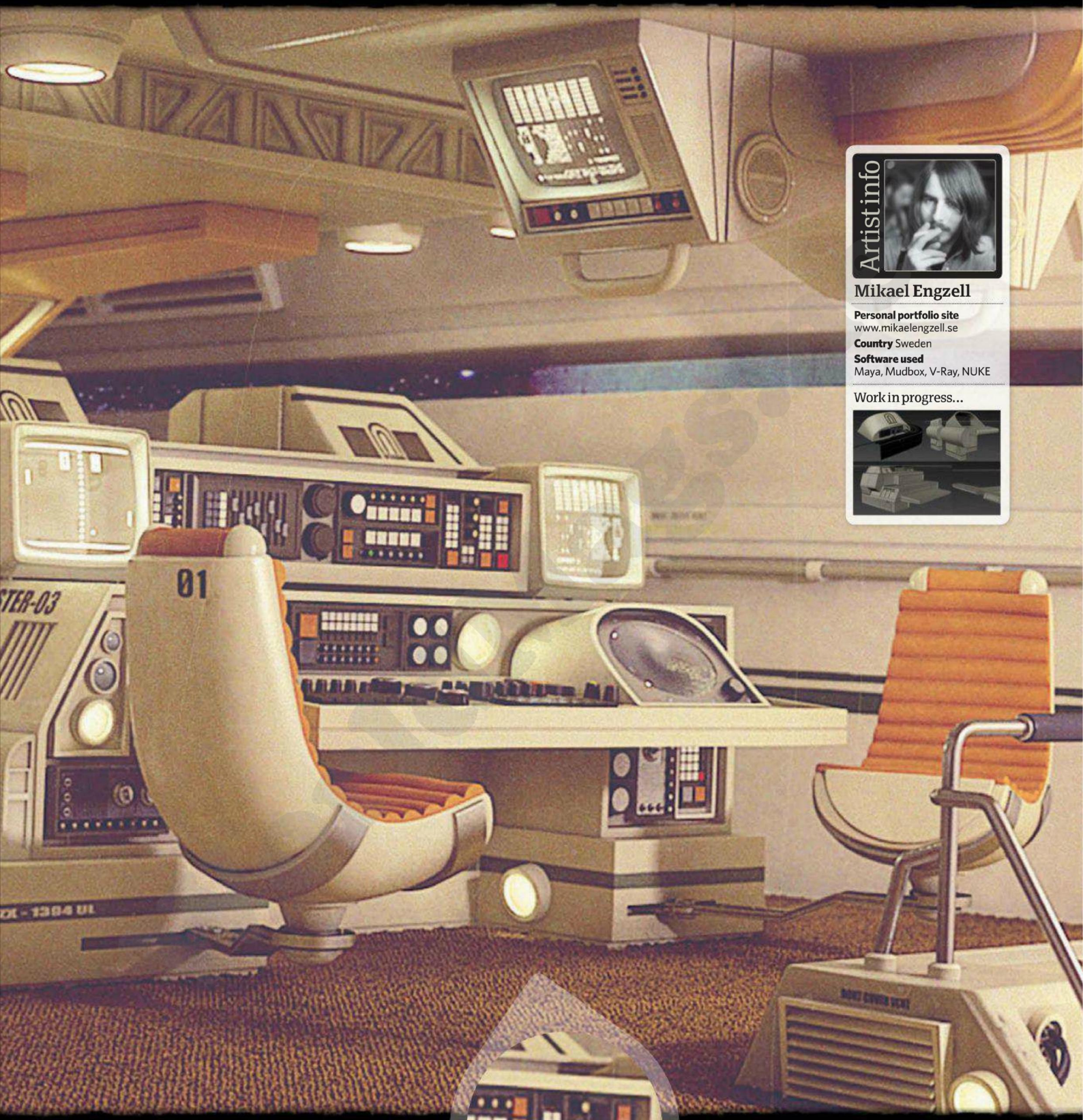

Artist info

Mikael Engzell

Personal portfolio site
www.mikaelengzell.se

Country Sweden

Software used
Maya, Mudbox, V-Ray, NUKE

Work in progress...

Worldmags.net

The team Loves

This guy's happiness is infectious! The pose really shows off Jian's fantastic understanding of anatomy, and the subtle backdrop keeps him star of the show

Lynette News Editor

Artist info

Jian Xu

Personal portfolio site
http://blog.sina.com.cn/cgradiation

Country China

Software used
Maya, 3ds Max, ZBrush, Photoshop, mental ray

Work in progress...

This man was a dignitary of Buddhism. He loved wine and meat, but in his wisdom encouraged kindness to the poor. His motto was: 'Wine and meat just pass through my body, but Buddha is always in my mind

Jian Xu, *Ji Gong*, 2011

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"The 3D car model was originally created for the Syd Mead contest held by The CGSociety. Due to the rush, the result wasn't that great, so in 2011 I decided to re-use the car model, in a new scene, with more attention to colours and environment, to make it look better"

Daniel Gosav, *Scersa – car concept,* 2011

Artist info

Daniel Gosav

Personal portfolio site
www.owlgrafiq.daportfolio.com

Country Romania

Software used
3ds Max, Photoshop

Work in progress...

The team Loves

"This beast of a machine simply demands attention, the overexposed feel of the shot gives a warm, retro vibe!"

Lynette News Editor

WorldMags.net

The team Loves

Red in Black is a stylish interior with a near-photographic finish. The variety of accessories and furnishings really encourage your eyes to explore the scene too

Sarah Editor

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Artist info

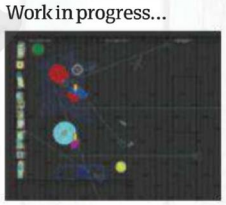
Adi R Indra G

Personal portfolio site
www.wix.com/blalank/3dviz

Country Indonesia

Software used
3ds Max, V-Ray, Photoshop

Work in progress...



"The Minotti Collection (www.minotti.com) and the work of Fernando Gasperin (www.black-haus.com) inspired this scene. HDRi was used for global lighting and photometric lighting for inside" **Adi R Indra G,** *Red in Black,* 2012

WorldMags.net

Blender movie in production

Blender Foundation's fourth Open Movie project is set to develop an open-source VFX pipeline

There are always exciting things going on with Blender Foundation. Backed by an enormous user community, traditionally students and hobbyists but growing to include professionals and studios, the free open-source Blender software has evolved into a popular and serious 3D package for artists. And it just keeps getting better.

To help push Blender development even further, the 2012 Open Movie project kicks into action, codenamed Mango, with sights set firmly on improving the visual effects pipeline. "There's no better way to develop software than to actually use it as well!" Blender Nation founder Ton Roosendaal enthuses. With VFX a hot topic in the film industry and studios all wanting to learn how to do it, Roosendaal wants to help people do business – which in turn helps his business move forwards. "We have a lot of users who are doing CG and visual effects for film," Roosendaal adds. "For them, we know we have to develop specialist tools that fit well inside Blender, but which are not part of the traditional 3D animation or 3D visualisation pipeline." The Open Movie projects have proven to be an efficient development model for Blender improvements. Roosendaal explains more: "In short, it's putting artists together with an ambitious content target that helps software developers find the focus and inspiration to get the technology and tools implemented. We've copied that model several times in the past years, each time centred on specific aspects of CG creation."

While the idea for Project Mango was conceived four years ago, initial planning began just six months after *Sintel* (the 2011 Open Movie) wrapped. With the project now in full swing, director Ian Hubert joins concept artist David Revoy in Amsterdam to realise the ambitious film. "I've been a fan of Ian Hubert's VFX and film work since he was in high school," Roosendaal says. "Doing this with him was an obvious choice!"

An international group of artists will also work at the Blender Institute, while the online community will have the chance to assist with tasks as well. "Anyone who's doing VFX or 3D computer graphics knows the excitement of starting up a film project, with all the open issues, problems and challenges ahead," Roosendaal says. "We are doing this even more radically – with a target to open up all technology and content as well. That in itself is totally exciting and satisfying!" Follow Project Mango at http://mango.blender.org and watch the progress.

Show your support

Blender Foundation is relying on crowd funding, sponsorship and donations to fuel Project Mango

A popular way to support Project Mango is to advance-purchase the DVD of the film, including the film in its entirety, plus all the production files. Published under Creative Commons, Project Mango will be available for anyone to spread, remix, or even re-create it. Visit **http://mango.blender.org/sponsors** to find out more.

© Blender Foundation | www.blender.org | Concept art by David Revoy

Did you know? Blender is the first program that will bring together ILM's OpenEXR and Alembic, Sony Pictures Imageworks' Open Shading Language, OpenColor and OpenImageIO, and Disney's Ptex

A The story will tell of a disastrous relationship split that leads to the near-destruction of Earth

B The sci-fi short film will combine live-action footage with ambitious visual effects

C We can expect to see the likes of killer robots ravaging the streets of Amsterdam. The short is planned for release in 2012

The film will be created using entirely open-source tools, and everything created will be delivered as free and open content

> "There's no better way to develop software than to actually use it as well"

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Mango sets new targets

As the team gathers resources, the focus is set on improving Blender development

Blender Foundation has defined two main targets: "We need camera tracking and matchmoving, and we need high-quality, photorealistic rendering," Roosendaal says. "Both development projects were started last year, with a lot of success. That means we can focus on more luxury features now, such as a good colour pipeline, matte editing, green-screen keying [and] Fracture tools."

Over the coming months, the development targets will include the following:

- Camera and motion tracking
- More photorealistic rendering cycles
- Compositing
- Masking
- Green-screen keying
- Colour pipeline and grading tools
- Fire, smoke, volumetrics and explosions
- Fix the Blender deps-graph
- Asset management to library linking

Who works on an Open Movie?

Roosendaal explains just how Project Mango is open to global talents

"Both artists and developers are being recruited via our own channels," Roosendaal explains. "People can submit portfolios and we just pick the best available. They then come over to Amsterdam to work here for three months or half a year. We expect that over 90 per cent of the work will be done here, the rest via crowd sourcing online... Anyone who likes to see specific features in open-source and/or Blender tackled, you can contact us now!" Find contact details at **http://mango.blender.org**.

Masterpiece

A creation of contrasts

Alessandro Baldasseroni pays tribute to the fantasy genre, taking inspiration from master artists Frank Frazetta and Jeffrey Catherine Jones

Alessandro Baldasseroni www.eklettica.com

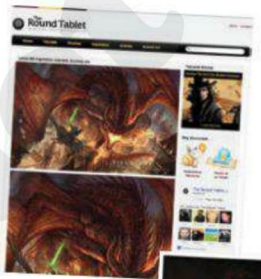
Inspired by cover illustrations of the Sixties and Seventies, Baldasseroni juxtaposes strength and fragility in his latest creation, reducing the details to the essential to focus interest on the sensuality of the anatomy and gesture.

Interested in creating visual contrast, Baldasseroni explains how he created this beautiful composition: "The straight render from ZBrush was already pretty satisfying in terms of the overall properties of the shaders. On top of that, the [Best Preview Render] allowed me to render in passes, which was great for compositing, and colour shift lights and shadows in Photoshop with adjustment layers. The colour scheme itself is pretty basic – mostly warm tones all over [with a] warm yellowish dawn light [and] reddish shadows. The cold temperature of the higher sky contrasts the warm overall tones, and a dark gradient from bottom to top lowers the saturation and temperature of the lower part of the image in order to convey the attention towards the head of the bull and the female figure."

Alessandro says, "overall improvement on the BPR and new material features allowed me to develop the bulk of the illustration in ZBrush"

Blog watch

A guide to inspiring and informative blogs!



The Round Tablet

Insight, inspiration, and resources

When you're in need of a go-to for inspiration, this is the place. Filled with stunning examples of the latest digital creations, as well as a host of tutorials and brushes to offer a helping hand, you'll be fuelled and ready for action after a scroll through the creatively stimulating offerings.

http://theroundtablet.com

behind the scenes

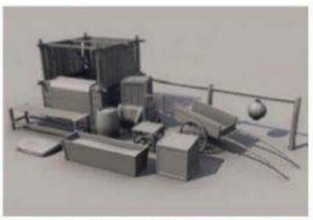
The Oriental West

Collaborators Richard Vosper-Carey and Sam Hayes join forces from concept to finish

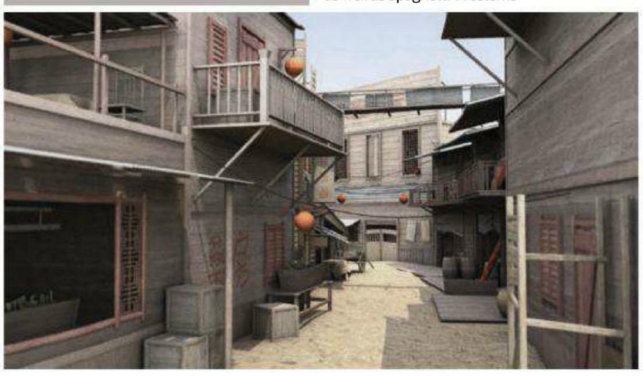
Green Octopus http://greenoctopus-cg.blogspot.com

Studying the CG Arts and Animation course at the UCA Rochester, Vosper-Carey and Hayes share a passion for environment creation, making this pairing of skills a perfect fit. "[We are] both interested in developing the pipeline from the modelling to rendering stage," they tell us. Exploring the idea of an alternate history, the two drew inspiration from the culture of the Old West, giving context to a new environment. While inhabitants aren't seen in the film, skilful attention to detail and subtle animations evoke a sense of life.

The majority of production time went into modelling the set. "We made use of Maya's Reference Editor, which [enabled] us to easily develop individual buildings without having to handle heavy environment scenes," they explain. "We also used render layers to control the foreground and background objects, depending on the camera, and used the basic layer system in Maya for different sections of the environment."



The film *Rango* was a big inspiration for the piece, as well as Spaghetti Westerns



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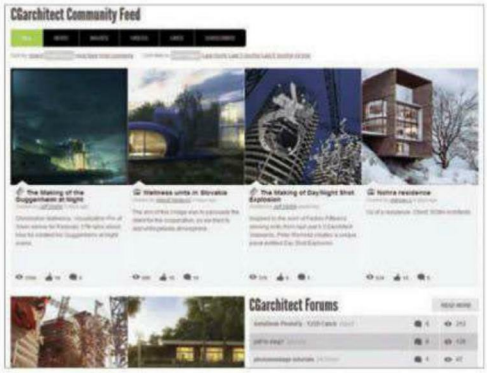

CGarchitect gets an overhaul

Founder Jeff Mottle upgrades CGarchitect to increase community involvement and artist exposure

Noticing that many community websites and blogs are a "one-way conversation", CGarchitect founder Jeff Mottle decided to change this and open information up to the masses. "We still curate and develop our own content, but we've added a lot of new functionality that enables users to submit images, videos and links in real-time to the site," Jeff explains. "Our new Community Feed is made up of submissions contributed by the community. The feed can also easily be filtered to show the most popular content as decided by the community... [I]t's the community that we are serving, so it only makes sense for the site to reflect the most up-to-date interests of the industry. We've of course also added a lot of social media integration that facilitates sharing content from the site beyond our own borders." Check out the new features at www.cgarchitect.com.

Artist spotlight

3D Toons

Darcie Banfield has been working with Maya's Toon Shader to create perfect two-toned cartoon characters

Darcie Banfield http://pearlzu.com

Seven years and two degrees after first discovering 3ds Max 5, Darcie Banfield got her break in the industry starting out in a small role at a studio called Octopi, creating sprites for games. When Octopi was bought out by Sony Online Entertainment, she continued making sprites for *PoxNora* and the Facebook game *Wildlife Refuge*, awaiting the next opportunity. "Right now I'm working for Desert Owl Games on a game called *Void Rim*," Darcie says. "There I've been modelling, making textures and animating characters."

Although 3ds Max was the tool of choice throughout school, Maya became Darcie's software of choice at Sony. "I hated Maya at first, mostly because it was the same program but... different," she explains. "I've learned to love it though and I like it more than 3ds Max now – especially for texturing and animating!" To master her two-toned creations, Darcie has been using Maya's Toon Shader – one for the raw diffuse colours and one for the shadows. "The lighting does all the hard work of shadow placement," she adds.

A challenge with the Toon Shader is getting the shadow tone shapes to form correctly on the model. The geometry has to be precise in order to avoid ugly shadow artefacts

SEE YOUR WORK HERE!
3DArtist Community
Contact **Lynette** with your latest news at **lynette.clee@imagine-publishing.co.uk**

3D Sketchbook

The fight for art

Samuel Burton joined the US Air Force to help fund his art education, but war changed his life forever

Samuel Burton http://sleepfight.cghub.com

When Samuel ran out of money two years into a 3D animation course at Savannah College of Art and Design, joining the Air Force helped him offset the costs. When war broke, however, his approach to life changed and it was a while before he found the way back to his passion. Now in Atlanta working on commercials and TV, he's proven a hit on the ZBrushCentral forums with concepts that he devises in his spare time.

Samuel first discovered digital sculpting at SCAD and was amazed by how intuitive the method was. His experience in other 3D packages helped him find his way around, and it took about a year of learning before he felt comfortable with it in his pipeline. "[Digital sculpting is] so similar to the real counterpart," he explains. "It's not so easy to make a design change to a small group of points that define a surface after smoothing, but with digital sculpture you can sculpt an arm, pose, detail... and pose in a couple of minutes!"

Starting with something as simple as a sphere, Samuel can come up with concepts quickly and not worry about technical constraints

Samuel has been drawing his entire life, learning about perspective, composition, anatomy and other fundamental skills for success

Samuel's favourite ZBrush tools include:

- The Clay brush in freehand mode, because it closely resembles sculpting with real-life clay
- The Clay Polish brush – great for long smooth shapes!
- The Clip curve function that enables me to smoothly cut into his geometry without destroying the mesh

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Buy the first 20 issues of **3D Artist** on one handy DVD from the Imagine Publishing store: **www.imagineshop.co.uk**

Missed an issue?

3D Artist issues 1-20 are now on DVD

If you missed one of the earlier issues of 3D Artist magazine, never fear – the ultimate DVD collection is here! Priced smartly at £19.99, the interactive DVD houses issues 1-20 for the complete 3D Artist experience. Also, since it's fully searchable, you can browse issue by issue or tap in a keyword to find what you're after. This makes it the perfect option to have by your side if you need quick help, advice or inspiration! Visit the Imagine Shop for more details: www.imagineshop.co.uk/dvds/digital-creativity.html.

Inspiration corner

What does music look like?

Miles Davis' *Pharaoh's Dance*. © Martin Klimas

Shot at 1/7,000th of a second with six ounces of paint per shot (18.5 gallons in total), Martin printed 212 images and blew two speakers

Martin Klimas cranks up the volume, using the vibrations of sound to create magnificent abstract paintings

Martin Klimas www.martin-klimas.de

While the 3D community is laden with inspirational CG treats, it's also good to broaden those horizons and discover what other creatives are up to. Take Martin Klimas, for example. This talented photographer uses his trusty Hasselblad to capture the effects of sound on paint. Layering splatters of paint on a scrim over a speaker, Martin blasts a dynamic or percussive piece of music through the speaker, and watches the paint dance through the camera lens.

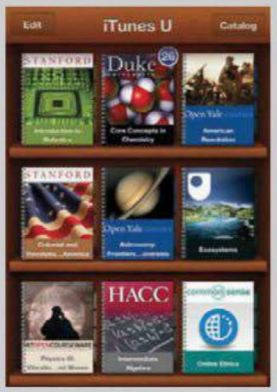
His other works include a series of photographs of porcelain figurines at the moment of destruction, which involved six months and 1,000 shots to produce a final set of images. Discover more of his inspiring photography at www.martin-klimas.de.

Free 3D Resources

Expand your mind

Free courses on the iPhone, iPad and iPod touch

iTunes U



Web: www.apple.com/apps/itunes-u

With the cost of education constantly on the rise, iTunes U brings welcome relief, offering free courses in literally thousands of subjects. Holding the world's largest online catalogue of educational materials, the app gives access to over 500,000 free lectures, videos, books, and resources on the iPhone, iPad and iPod touch.

Students can also take advantage of the free app to expand the traditional classroom experience. Features include audio, video, iBooks textbooks, course syllabus, class assignments, instructor posts, PDFs, presentations and more, all available at a tap. Find iTunes U in the App Store.

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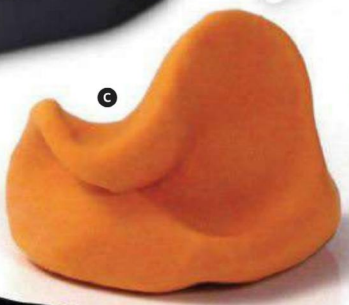

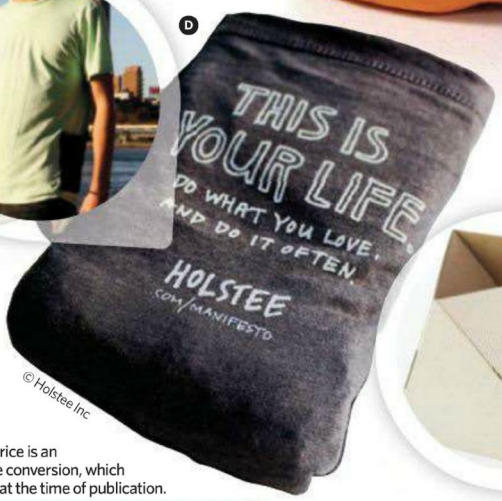

© Holstee Inc.

* The US $ price is an approximate conversion, which was correct at the time of publication.

Product of the month

HoverBar for iPad 2

» **TwelveSouth LLC**
Stockist: http://twelvesouth.com
Price: $80 US
We say: When TwelveSouth launches another life-changing product, it not only supplies cutting-edge design that literally catapults your technology into future-dom, but it presents it in such style that you won't know what's more impressive: the packaging or the genius product it's protecting.

HoverBar for iPad 2 is a sturdy bit of kit that offers most iMac and Apple displays an extra arm to helpfully add your iPad to your existing workstation. Whether you float references or chat on Facebook as you work, this additional mini display will complement your desktop world perfectly (A).

(B) Turtle Shell Boombox

» **Outdoor Technology**
Stockist: www.outdoortechnology.com
Price: $130 US
We say:
Mikie Krisztal is the designer behind the Turtle Shell Boombox. To blend the outdoors with sweet music, he devised a cool-looking portable speaker with a water-resistant shell. It has a built-in mic for speakerphone functionality and features a selection of on-shell controls too. It's due out in the summer... just in time for picnics and beach parties.

(C) Sugru

» **FormFormForm Ltd**
Stockist: https://sugru.com/buy
Price: From £8
We say: Sugru is an exciting putty that sets in 24 hours to form a strong silicone rubber, giving 30 minutes' playtime to mould its modelling clay-like form to create anything! Designed to stick to most surfaces, it bonds to aluminium, steel, ceramic, glass, wood and once cured it remains flexible like rubber. Whether you repair shoes, make a cable tidy, or design a character for your pen top, this is serious grown-up fun!

(D) The Holstee Original Tee

» **Holstee Inc**
Stockist: http://shop.holstee.com
Price: $40.00 US
We say: A T-shirt in your pocket – in a pocket! Made from hemp and organic cotton, the Holstee is a tee that's always ready to go, folding down into its own pocket to make the perfect travelling companion. Holstee comes in two colour options: mint with a charcoal pocket, and concord blue with a slate pocket. The pouch makes a handy pillow for on the road – just be careful not to drool if you fancy wearing it later!

(E) OCTA

» **¿adónde?**
Stockist: http://shop.adonde.fr
Price: €23.00
We say:
The OCTA is a waste paper basket from the French company ¿adónde?. Its silk-screened and incredibly angular exterior is available in five different shades (that's white, black, yellow, neon green and neon pink, colour fans) and is made from recycled cardboard. We love the OCTA because it's stylish, stackable and can be used for regular storage rather than just rubbish.

(F) Pirate Edition Beard Head

» **BeardHead.co.uk**
Stockist: www.beardhead.co.uk
Price: £20
We say:
Ahoy! You might think that balaclavas are only for sub-zero temperatures or for buccaneers partaking in nefarious activities, but you'd be wrong. The BeardHead is a fabulous facial accessory, ideal for soothing your poor beard-growing woes. It provides the perfect fusion of wool and acrylic and even comes with an optional moustache for the more discerning wearer.

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Dell recommends Windows® 7.

The power to do more

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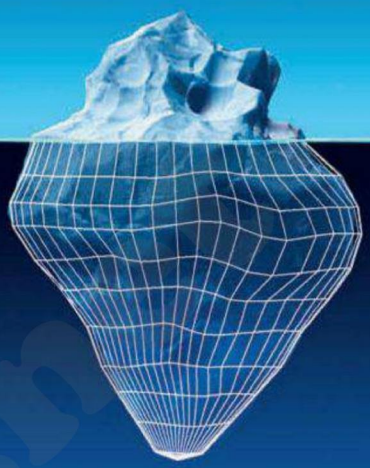

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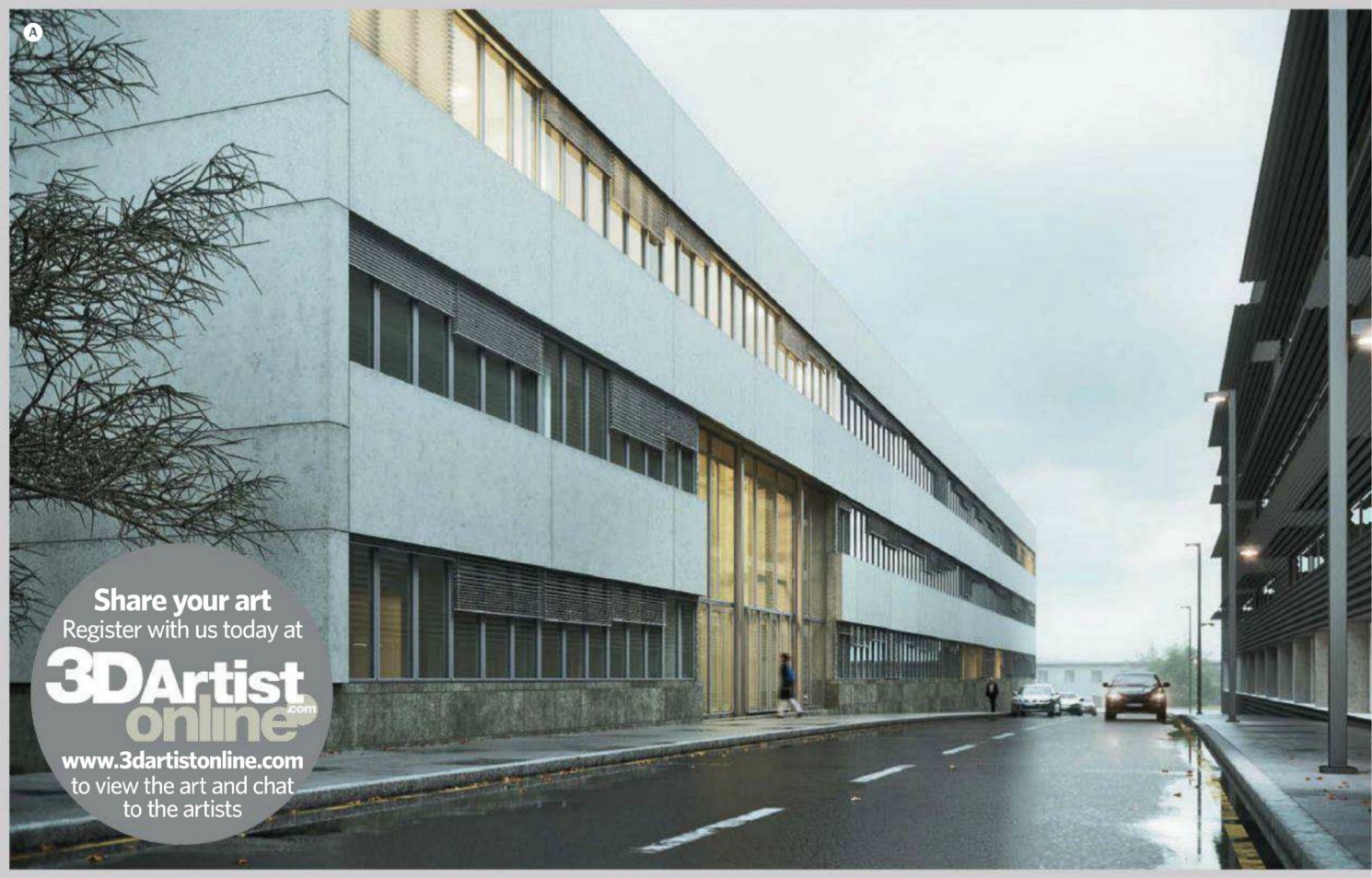


Pictures of the week

THESE ARE THE IMAGES THAT WERE AWARDED PICTURE OF THE WEEK IN THE LAST MONTH

A Jacinto Monteiro
» **Biomed View 01**
Jacinto says: "The building represents the Biomed Facility in Coimbra, Portugal"
We say: "You've certainly achieved a wintery mood in this image – well done!"

B Toni Bratincevic
» **Tesla**
Toni says: "Dedicated to one of the most important inventors, scientists and geniuses of the 20th Century: Nikola Tesla"
We say: "An awesome concept and fantastic execution"

C Yinxuan Li Dezarmenien
» **Life in Pink - Sweetness**
Yinxuan says: "An image that's part of the *Life in Pink* series. I wanted to make something sweet and calm"
We say: "Excellent composition and character pose"

D Timour Ozdoyev
» **Toyota Aqua**
Timour says: "This new hybrid car was created in 3ds Max, Photoshop and V-Ray"
We say: "Great surface detailing and studio setup"

Picture of the month

Tomas Sciskala

» **Bedroom**

Tomas says: "Modelled, textured and rendered in modo"
We say: "An interesting camera angle with lovely lighting"

Ben Blease

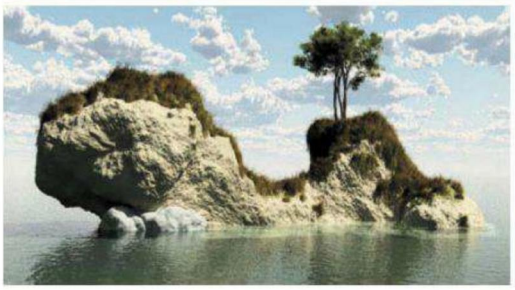
» **Marsh**

Ben says: "What started as an experiment with the Blender particle system later turned into something more"
We say: "The grass is very soft and fluffy... we're tempted to reach out and stroke it!"

Robert Schlenker

» **Pretty in Pink**

Robert says: "A Poser import, rendered in Vue 10 infinite"
We say: "Her top is a little impractical without some straps, but the pose and skin is very nice"



Deividas Bakutis

» **Lost Island**

Deividas says: "Made in Vue"
We say: "Lovely composition and rock colour. It'd be great to see a version with a more prominent horizon line, if possible"

Have your say

Write, email or use the website forums to get in touch about the magazine, your problems or triumphs

Top tweets

Get involved... **@3DArtist**

@Kenetor All 3D is fudged somewhere along the way.

@saeriol Really enjoyed the latest edition of 3D Artist. Well done team!

@WayneRobson RT Happy pancake day, peeps! What are you putting on yours? <<Polygons and a scattering of stray verts.

@MarkBTomlinson Maple syrup. I'd prefer lemon juice from the proper plastic Jif lemon, but you can only get real ones here, it's just not the same.

@3DArtist Sounds tasty :-) Not sure if it beats our orange & Nutella combo, though.

@WayneRobson Well, I could go with Cuboid Crystalline shapes at a push LOL.

On the Wall

Facebook.com/ 3DArtistMagazine

Gordon Tarpley I started using Shapeways a few months ago and they are AWESOME. 3D printing is really addictive.

Larry Gilman Love this rag, has all kinds of cool info. I just ordered the **3D Artist** DVD – it has 20 issues and hardly takes up any space. I can carry 20 issues anywhere I go.

Andy Leon [3D printed objects for creatures great and small?] Replacement shells for snails that get stepped on... poor little buggers don't know what's going on.

Klaire Hodgson Custom-made limbs for poor cats and dogs. I know a three-legged cat that would appreciate it.

Star letter

digital-tutors

www.digitaltutors.com is a learning resource site boasting a library of 14,000 video-based CG lessons.

THE AUTHOR OF THIS ISSUE'S STAR LETTER WINS A MONTH'S FREE SUBSCRIPTION TO DIGITAL-TUTORS WORTH $45

Desk calendar... a late entry!

It's late but I love you guys and I thought you might want to see it anyway. *Looks down, kicks can and runs off crying*.

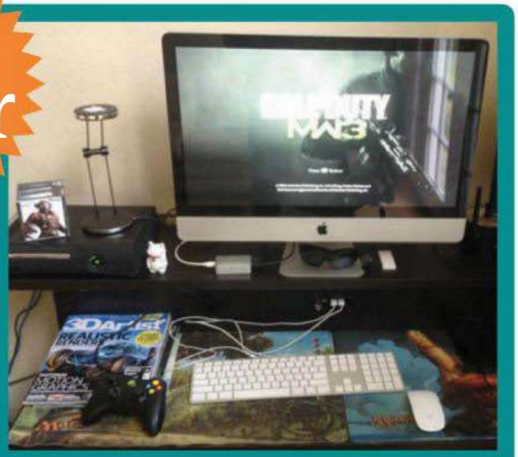
I got the mag late... sniff!

Anyway, keep up the good work and please do more stuff on modo and ZBrush. We want more modo! By we I mean the other 3D people that live in my head.

Peace

PS: I've been doing 3D for like 20 years and your mag is the best yet!

Storm Shadow, via email



Thanks for your entry, Storm. Unfortunately it arrived too late to be considered for the calendar competition we ran back in issue 36. However, we admire your dedication and as such we would like to award you the star letter prize this issue. Enjoy the month-long free subscription to Digital-Tutors!

Bonus bits

I live in Spain and discovered your magazine a few months ago. I had purchased some individual issues from your online store, but decided to invest in an iPad subscription recently. However, when I've downloaded the tutorial files from your website, the other freebies don't seem to be with them. Can you help with this?

Diego Pérez Tortosa

*Hi Diego, thanks for your email and for your recent subscription to **3D Artist**. Unfortunately the free disc content currently only applies to the printed editions of the magazine – while all of the tutorial files are hosted on our website, the free models and software are not. The iPad issues are cheaper as a result, but we are currently working on a solution to give people the best of both worlds.*

With compliments

Just got the issue of the magazine you sent me. It really looks terrific. You and your team have done such a great job. It seems each issue just gets better and better.

Andrew Jerez

So pleased you liked the magazine, Andrew! Thanks for your support.

SAVE MONEY & SUBSCRIBE! Turn to page 90 for details

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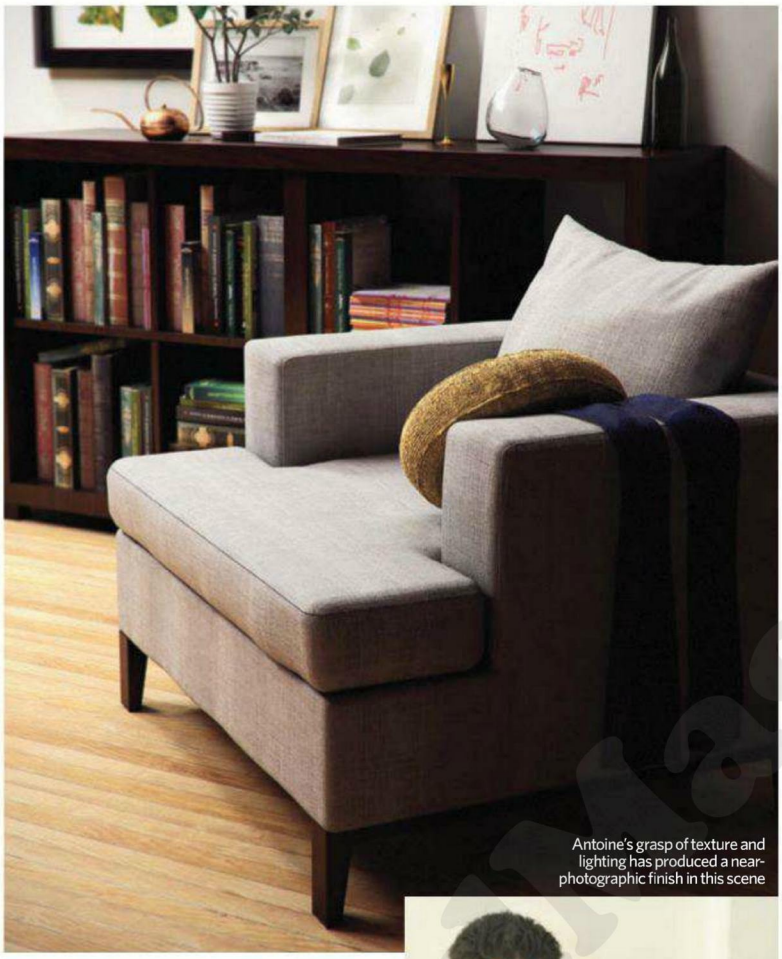

Antoine's grasp of texture and lighting has produced a near-photographic finish in this scene

Featured artists

I've just received the copy of 3D Artist with my featured image in the gallery and it looks great! I've already had firms contact me for work and for that I'm supremely appreciative. All the best,

Antoine Desjardins

I got issue 37 of 3D Artist through. It's a great honour to be there. I'm really happy with it and I received the handwritten note too. It was so nice to work with you and I would be glad to have further co-operation with you in the future. Thank you so much for everything,

Poorna Jayasinghe

DAZ problem

Perhaps Downunder we're a more literal lot, but reading the cover of issue 34 of 3D Artist it states 'includes full version of DAZ Studio 3 Advanced'. It's more than disconcerting to find that it doesn't include any such program, only a link to download a 200+MB file... Dare I say it's misleading? Trusting there's a plausible explanation.

Peter Bekier

Hi Peter, thanks for getting in touch with your disc-related query. Unfortunately, due to this particular software's file size and our cover disc space restrictions, the DAZ resources are hosted on our website. If you load up the disc and click the link from the interface, you can access the free software download from there. Meanwhile, when it comes to inputting the DAZ Studio 3 Advanced serial code, you'll find it listed on page 113 of issue 34.

You tell us

What's the best (or worst) piece of art advice you've been given?

Jóhann Georg Gunnarsson "Keep trying."

@dan_hin "Cheat"

@dan_hin Or "Practice, practice, practice."

@Sean Kelly Best: buy art books; worst: being told to paint in blocks of colour with rubbish paint brushes.

@WayneRobson Worst advice I got was when I started: "Give up 3D, you'll never be any good or achieve anything" lol.

Andrzej Kuziola "Be open to critique."

@the3dwoody "Stop wasting your time on that computer. There's no future in it." – my art teacher, 1998.

@Kenetor Best advice I've had was from Pete Draper: "You're only as good as your reference material so take/get lots of it!"

@Tojek_VFX "Don't light [your piece] to look real. Light it to look like 'Filmed Reality.'"

Which title should claim victory at BAFTA's games awards?

Paul Champion They forgot [to nominate] *Dead Island* :(

Josh Perry No they didn't, they just recognised that it wasn't worthy of any awards...

3D Artist Magazine *L.A. Noire* FTW!

Josh Perry Yeah *L.A. Noire* is a good nominee. Personally I think that *Uncharted 3* looks graphically beautiful, so I hope that gets it :D

Paul Champion Not played *L.A. Noire* – would have liked *Dead Island* as a candidate for best game. *Skyrim* will pick up some awards.

Duncan Evans *Modern Warfare 3* – incredible detail and cinematics to boot.

JOIN THE DISCUSSION:
Facebook.com/3DArtistMagazine
Twitter: @3DArtist

Due to disc limitations, some of the larger files are hosted on our website

In *The Pirates!* lighting has been amped, colours stretched, and a whack of saturated colour added for a glamorous pirate movie feel in honour of the Hollywood greats

British Aardman at its best

By Lynette Clee

How 3D printing and CGI helped Aardman Animations retain the pace and style of a classic stop-motion production on a new scale

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In 2007, word had it that *The Pirates!*, based on the books by Gideon Defoe, would be developed as a CGI movie under the direction of Aardman's Peter Lord. "I did an initial [clay] sculpt of Pirate Captain for Pete, for when it was going to be the CG version, [and] Pete got the cabin built [to] help in terms of the look of it as a CG thing... to give the modellers and everyone an idea of what the look was going to be," explains Loyd Price, animation supervisor on *The Pirates!*. To show Sony Pictures Animation stills of the clay cabin, photographer Frank Passingham was hired in the October to take care of the shoot. "Sony saw the pictures and visited the studio [to see] the model of the cabin for themselves firsthand," says Frank, who was cast as director of photography on *The Pirates!* several months later. "On the strength of what they [saw], they decided it should be a stop-frame animation film. From that moment, we were all very excited that the film could be made in the medium that [is] Aardman studio's true strength."

A combination of stop motion and CG gave way to more options for problem solving the complexities of traditional stop-frame animation. Where it's technically easier to handle water dripping off characters on a 5:1 scale set, vast expanses of sea with all the atmospheric effects is far easier to accomplish in CG. Read on to discover how rapid prototyping lent a helping hand to speed up the animation of character expressions on set, while CG software provided smoke, fire and foam with a classic Aardman twist.

The Pirates! In an Adventure with Scientists

Aardman's most adventurous, most exciting and most expansive stop-motion film yet hits the big screen 28 March

***The Pirates! In an Adventure with Scientists* is the new animated comedy feature from Aardman Animations and Sony Pictures Animation. It takes us on a surreal quest through a beautifully created – albeit slightly anachronistic – world,** where larger-than-life characters in larger-than-life situations prove Aardman capable of far more than the traditional character designs it's become known and loved for.

A broader comedy than what we've seen in *Wallace & Gromit* and *Chicken Run*, *The Pirates!* features a greater range of characters – still as loveable and natural as their predecessors – that entertain with plenty of slapstick. Following the mishaps of a group of fairly hopeless male characters in their quest for fame and fortune, we revel in the hilarious consequences of their exploits, from unexpected chase scenes in a bathtub through Charles Darwin's house in Victorian London, to the surprising sinking of the Beagle. "You've got pirates straight out of the Caribbean [in the] 1700s coming up against Queen Victoria," laughs Loyd Price, supervising animator on *The Pirates!* "There are loads of different locations, and different characters... It's been a lot of fun to work on!"

Meet the crew

Name Andy Morley
Role VFX supervisor
Duties Responsible with the VFX production and for delivering the VFX work for the film
Software used on *The Pirates!* Maya, Houdini, RealFlow, Mudbox, NUKE, RenderMan, mental ray, Photoshop, as well as a miscellany of others
Favourite beard "Well, luxurious, of course!"

Name Chris King
Role CG supervisor
Duties One of three CG supervisors looking after the 3D aspects of the film under the guidance of Andy Morley
Software used on *The Pirates!* RenderMan Studio and Pro Server, RealFlow, Houdini, MARI, Photoshop, Maya, NUKE
Favourite beard "I think I would have to say a Garibaldi. Google it!"

Name Frank Passingham
Role Director of photography
Duties Joining the production full-time in 2009, Frank helped thrash out the cinematography of the movie
Software used on *The Pirates!* Stop Motion Pro (cameras were DSLR Canon D1 Mark 3)
Favourite beard "I would have to say a luxuriant"

Name Loyd Price
Role Animation supervisor
Duties Involved from the development stage to bring together the animators that would realise the director's vision
Software used on *The Pirates!* Stop Motion Pro, Maya
Favourite beard "It's got to be a good, big, full, bushy beard – a big, glossy beard ... not that I can grow one myself, so it's a thing of envy, really"

Name Rod McFall
Role FX supervisor
Duties Supervising the shots that had some of the more complicated or traditional effects
Software used on *The Pirates!* Houdini, NUKE, RealFlow, PFTrack, Photoshop, Maya
Favourite beard "I don't possess the 'burly pirate' gene... but if I could then I would definitely grow a most luxurious pirate-y beard!"

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Character designer Jonny Duddle did a lot of the concept work for *The Pirates!* from his home studio in Wales

One of a kind

The Pirates! is a unique film. Where else could you shoot 20 Hugh Grant scenes simultaneously, and employ hundreds of 3D-printed mouths to perfectly annunciate an actor's dialogue, if not on the set of an Aardman production?

Work on *The Pirates!* far surpassed the studio's earlier projects, requiring one of its biggest animation teams yet. "We've brought some people over from Canada and from various parts of Europe... by the time we finished the film, we had 32 animators on the team and then another five assistant animators," says Loyd Price, recruiter of the talented force. Unlike any other Aardman stop motion that has come before, 3D printing was brought in on *The Pirates!* to create hard mouth replacements for the many characters – as used in Henry Selick's 2009 stop-motion fantasy, *Coraline*. "The characters were more complex on this [film] than what we've done previously – a character like Queen Victoria has very fine lips, and very fine teeth, and to get all your animators being able to sculpt that accurately [is] really difficult," Loyd adds. "So that's why we went down the rapid-prototyping route."

With three 3D printers and a 3D scanner in tow, the animation team took the initial clay sculpts, removed the heads, cleaned off all their hair and scanned them all individually. "If we were just going to print objects off it'd be fine, but because we needed to actually be able to manipulate those objects, we then had to translate everything into Maya," Loyd explains. "Helen Duckworth, our CG modeller [would] build her framework over that, and it would attach to all the contours. Because what we were trying to get was something that still looked like it was hand-built, rather than built in a computer... She would spend about a week building the head in CG, also sorting out where all the cut lines were going to go for how the mouth was going to fit on, and all the internal geometry... so that when the skull was printed, it would take the fittings for the metal armature... It was a real mixture of model making and CG."

The characters exist in real space on real sets, so the animation brings the whole world to life in a believable way

The outdoor scenes almost always featured a CG sky – usually involving the sea or a London skyline added in too

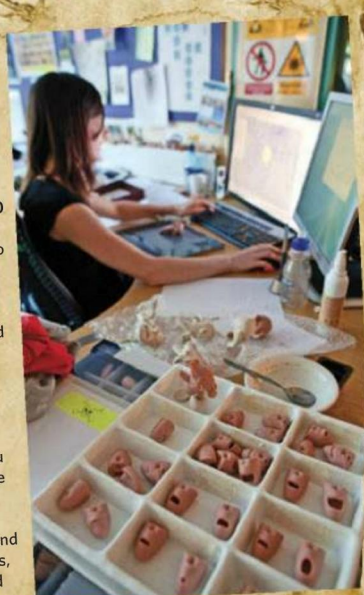
The pirates get lippy

A library system of mouths helped animators give the charismatic puppets their Aardman charm

The number of mouth shapes per character depended on how many lines each spoke: Pirate Captain had about 260; Queen Victoria and Charles Darwin around 220 each; with minor characters having anywhere from 40 made up. "You can cover most of your basic stuff with about 50 mouths [and] we'd also make specials – there's a bit where [Pirate Captain] goes to kiss somebody, so he's got to pucker his mouth up... that was the big advantage about having built the things in-computer initially," says Loyd.

Mouths were matched to the voices. Hugh Grant is the voice behind Pirate Captain, whose read-throughs and various film appearances helped animators refine mouth shapes for a perfect delivery. "If you were doing lip-sync in the computer, quite often you would spline between two different shapes, then you might have six positions between an A and an M, and you just choose on the animation curve [what] you wanted," Loyd explains. "What we'd have to do is, because it's a replacement system, we'd have to decide exactly what positions we wanted in between. So you would have a shape like an M, but then you would have a +1 that would be the slightly tighter shape, so -1 would be slightly looser."

Each animator would make a box of mouths for a specific shot. "Sometimes in your box you might get a mouth that says "Ian, Unit 2", and you'd know that it was in a unit nearby [with] one of the other animators, and you just had to borrow that mouth from him and give it back," Loyd says. "I think we ended up building about 6,800 mouths!"



For audio, the puppets have the advantage over their CG counterparts by occupying real space

Senior modelmaker Andy Bloxham sculpts Pirate Captain's beard

3D printing with a bang

How Aardman blew up a hot water bottle using 3D printing technology

As well as 3D printing mouth replacements, Aardman also used the helpful tech in a sequence where the Pirate King blows up a hot water bottle, which had to expand. "We were able to quickly build that hot water bottle on the computer in Maya, work out the animation sequence and then print off all those parts," Loyd explains. "Otherwise we would've had to hand-build replacements, which would've taken ages, or we'd have had to try to make something that we could actually inflate. The rapid prototype technology – having that system there – gave us other options as well."

> "You've got pirates straight out of the Caribbean in the 1700s coming up against Queen Victoria" **Loyd Price,** animation supervisor

Modelmaker Will Harding works on the armature of a puppet's hand

While this may sound like a drawn-out process to most button-pushers, this laborious stage in fact sped up the shoot, because the lip-syncing was being worked out beforehand. "Generally, when we're working with a character with a full Plasticine head, we're probably spending half our working day sitting at our desks just changing the mouth – tweaking and adjusting the mouth shapes," Loyd goes on. "With this movie, there are a lot more multiple character shots, there are a lot more characters moving around [and is] a lot more action. We've still got Plasticine on the forehead – so you've still got it around the eyes where you really need it for the acting and the performance. It just meant that we were able to animate quicker."

Using hard mouth replacements came at the cost of ugly cut lines at the joins, which needed removing in post. But with those gone, you'd have no idea their faces weren't entirely of Plasticine makeup! "I don't think people should be aware of it," says Loyd. "Nathan, who was our TD on the rapid-prototyping team, was able to make it so that we could put little fingerprints on the characters' ears and textures on their noses, so that when you get in close on them, you have this textural feel."

When asked if he missed the traditional way of sculpting expressions, Loyd responded, "I've been sculpting since I was very small, so you do miss the thing of re-sculpting the mouth shapes to some degree... We've still got Plasticine around the forehead and the eyebrows [because] when you're watching somebody talk you're always watching their eyes anyway... Really, once everybody gets [onboard]... it just frees you up!"

A Every character that had lines to say or performed facial expressions had a set of mouth shapes created

B There's lots of comedy in the film. David Tennant is the voice of Charles Darwin, persuading Pirate Captain to seek fortune in London

C The pre-vis is a storyboard to show shot composition and timing. It helped animators work out how long characters need to move

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Black Bellamy is the pirate who always wins. Cue a Pirate of the Year contest, like the Oscars for pirates!

"Gravity is somewhere between real-world scale and puppet scale, where the six-foot Pirate Captain is 35cm tall" **Rod McFall,** FX supervisor

Stop motion in stereo

Loyd Price explains why most stereoscopic stop-motion films are shot using a camera on a slider mechanism

"It's the same way as it used to be done when you're using stills cameras. Because the thing is, we had 40 units on the studio floor, then we had cameras in repair, and there were cameras where the pixels were burning out... So I think we actually had about 60 cameras. Now, you can get stereoscopic cameras, but obviously each camera costs you an absolute fortune, and if you need 60 of them, that's your budget gone just buying cameras!" Loyd tells us, laughing.

Building The Pirates!

Every character throws up its own challenges for the animators, with solutions varying for each. Take Pirate Captain, for example

Mighty chops

Pirate Captain's jaw's clever design means it gets helpfully driven by the numerous 3D-printed mouth replacements

Weird beard

His beard is actually made of silicone. To change expressions, you stretch the beard down, lift the mouth off, and pop another one in!

Luxurious fuzz

The beard also has a little mechanism in the chin which enables animators to wind it, making the end of it joyfully move up and down

All the frills

Pirate Captain's fancy beard, swishing coat tails, swords and Polly on his shoulder gave the animators plenty to contend with

D Elements of the film feel somewhat surreal. You never learn Pirate Captain's real name

E Everything is scaled down. The puppets are actually about 30cm tall

While few stop-motion films have been made in stereo to date, *The Pirates!* is a perfect fit for 3D, with sets offering great depth for the crew

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F Pirate Captain is a pretty third-rate pirate; he never gets any treasure, he's pretty ineffective. Hugh Grant's voice adds comedy to the role

G Queen Victoria's throne room is a huge underground space filled with large piles of gold and treasure to marvel at

H When Pirate Captain discovers that his trusty parrot is in fact a dodo, he heads to London to try his luck at winning Scientist of the Year

Animator Wendy Griffiths animates Pirate Captain on set

Patience is a virtue

Shooting in stop motion differs from CG filmmaking in that your characters' performances only happen in front of the camera. So rather than the many layers that will be laboured over in an all-CG production, the goal with stop motion is to get each shot in one take, like in live-action. But where live-action films generally tackle one or two scenes per day, Aardman will shoot up to 42 and from that an animator will achieve on average five and a half seconds of footage a week. It's a slow process.

Adding to the complexities of stop-motion filmmaking, *The Pirates!* has also been shot in stereo. "In January 2009... it was not considered that it would be shot stereoscopic, as I had originally hoped," director of photography Frank Passingham comments. "It took the release of *Avatar* to convince the producers that it should be shot [in] stereo, and after initial tests in mono we moved to shooting in stereo." This slowed things down on the set floor, however. "Your camera is on a little slider so basically it takes the left eye, moves across, takes the right eye, and then moves back," Loyd says. "So you've got to do a lot of work making sure that the inter-optics are actually right... We had to do quite a lot of testing [and we'd] view stuff on our big screen upstairs... Because what happens is, when it's in 3D, some of the stuff that you'd normally get away with in 2D, in terms of movements and things like that, become too strobe-y." Scenes had to be carefully composed. This involved avoiding scenarios where light against dark objects at the edge of a frame might scramble the audience's eyes in 3D.

Filming Aardman quality is a slick operation that aims to bring everything together right first time, starting with a pre-vis guide. "A great team of artists was put together to pre-vis every single shot in the film," says CG supervisor Chris King. "This was hugely valuable to the entire production crew to be able to accurately see what made up each shot, from cameras and sets, to props and casting." Photographers use this pre-vis guide to set up the lighting ready for the animators to do a pop-through. "If a character is moving through the set he may be shown in sequential positions by shooting blocks of four, six or eight frames – a quick way to see the action is working and lighting is working with that action," Frank says.

At Aardman, everything is performance driven. The director and the animator also do what they call a LAV (Live-Action Video), where the director acts out the shot with the animator. "You're playing the actor's dialogue, but basically you're acting along to it," Loyd offers. "We do that because, what we need to know is... what performance and what emotions we are going for... You're really using it as a guide to where your key acting points are." Testing the puppets in a few key positions with the lighting and camera turned on ensures there are no odd shadows, and that foreground characters stand out well against the background. "After the pop through there may be a block – really a more detailed pop through," Frank goes on. "After that comes a rehearsal, and finally shooting and animating for the shot proper. So after all these preparations and rehearsals we hope that when we get to the actual shot all the elements will come together and we'll get it right the first time."

Eccentric filmmaking

Rod McFall discusses the complexities of shooting water effects in stereo

"One of my very favourite scenes in the film is when Pirate Captain backs the ship into its parking space on Blood Island and accidentally crushes a poor hapless pirate, trying furiously to row out of the way. It's your basic cartoon fun, but I love it!" Rod says. "However, since this is a fully stereo film the entire water effects needed to take place in a very specific 3D space. That means you can't use the usual bag of tricks to patch things, you have to instead essentially do it in a single take by getting the water simulation and spray just right with only a little room to polish up in the end.

"Another peculiar thing about Aardman films is that gravity is somewhere between real-world scale and puppet scale where the six-foot Pirate Captain is 35cm tall. So in order to get your physical simulations to match what has been shot in camera you have to step back and just see how it feels oftentimes. Similarly, **[Spoiler alert]** one of the last shots in the film where a giant sea monster eats our heroes and then spits them out again had to happen in one very long shot, with no cutaways, to make things easier – thanks Pete!"

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Camera angles alone won't create mood: the camera lighting team works with set designers to stage a specific atmosphere

The thinner and lighter models were more immediate characters, from an animator's point of view, since their proportions offer more movement

How to create Aardman water

Chris King describes the process of generating sea with a hand-sculpted look

"The CG water was obviously a huge challenge and we had to develop a system that would cover all the sequences and effects that the film required," Chris explains. "We started by building a RenderMan DSO displacement based on the Tessendorf map system. We then wrote a RenderMan shader and a NUKE template to reconstruct AOVs. Finally, we wrote a Maya plug-in to display the waves interactively in OpenGL, and added lots of control by adding layers that could add extra waves, painted displacement or calming layers.

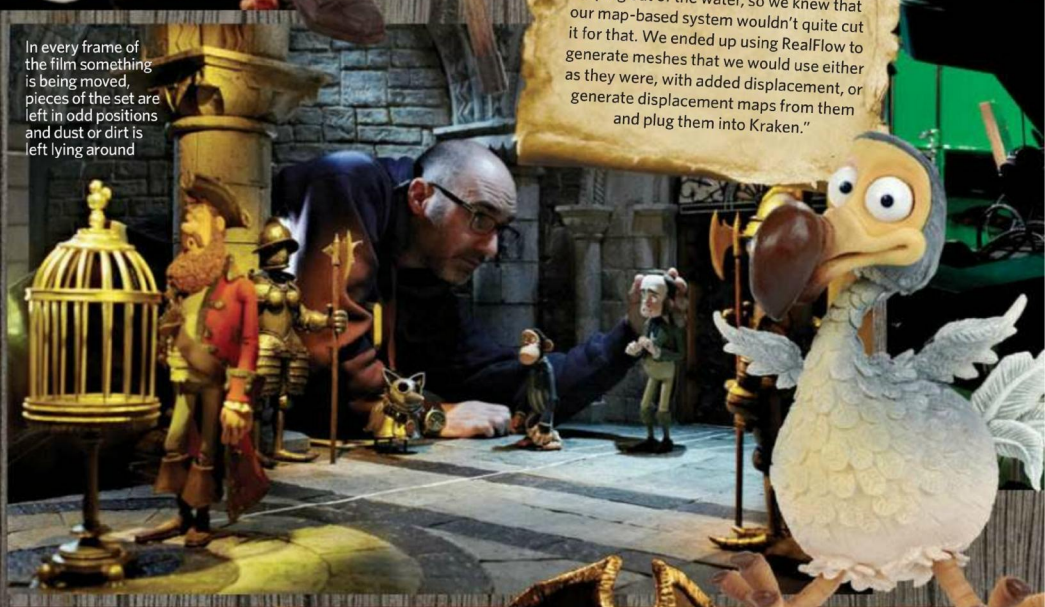
"Along with Maya particle simulations for foamy interactions, this system – that we named Kraken – covered the technical aspect of 95 per cent of our water shots. For the last five per cent we had to go for a bespoke water system. We had shots with boats being crushed and sea monsters leaping out of the water, so we knew that our map-based system wouldn't quite cut it for that. We ended up using RealFlow to generate meshes that we would use either as they were, with added displacement, or generate displacement maps from them and plug them into Kraken."

The Aardman effect

Aardman has a proven track record in stop motion, with an ability to create and populate complex worlds that's first class. But when huge landscapes and epic sea environments beckoned, having a VFX department at hand was very useful.

Before any sequence is begun, a process meeting would decide how each shot should be tackled – some of the more complex action scenes were better suited to CG. "There was an abundance of green screen work, with heavy use of 3D and 2.5D CGI extensions," says VFX supervisor Andy Morley. "A pirate film is not a pirate film without galleons, and where there are galleons, you need water. In this case, lots of it! The water would not have been achievable in-camera, at least to the level of complexity required for the story."

Water was the biggest challenge for the VFX team. "Today's CGI software always wants to try to give the tools to make it possible to achieve real and lifelike renditions of natural phenomena," Andy comments. Whereas Aardman water has to appear real, feeling sculpted at times with a stop frame feel to its movements. Additional CG work included flying creatures, atmospheric effects, explosions, expanding foam on a gigantic scale and digital doubles that helped support the live-action puppet cast. "In stop motion you are limited to an actual physical space that you can get into, which is why we did the crowd scenes in CG," explains FX supervisor Rod McFall. "It's impossible to manipulate that many characters in one go, but with CG you take away the limits... Of course, now that you've done that in CG, you have to match the imperfections of the real puppets, such as lighting flickering and surface aberrations!"



In every frame of the film something is being moved, pieces of the set are left in odd positions and dust or dirt is left lying around

Using stereo is a creative way to enhance the comedy and dramatic elements in the film. The main aim was keeping it comfortable

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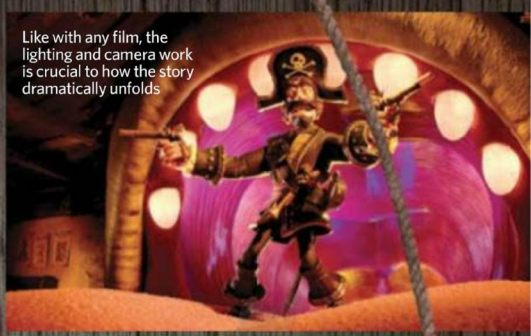
Green screens were used a lot, almost all seas and skies were provided by VFX. On the largest shoot there was a 180-degree span of green screen

"A pirate film is not a pirate film without galleons, and where there are galleons, you need water. In this case, lots of it!"

Andy Morley, VFX supervisor



Like with any film, the lighting and camera work is crucial to how the story dramatically unfolds

To make the ship look like it's in the middle of the ocean, a gimbal was built to control its pitch and roll

I With stop motion, much more is possible. "Gravity can be overcome, and there are no safety concerns for the actors – apart from a little lost clay," says Chris

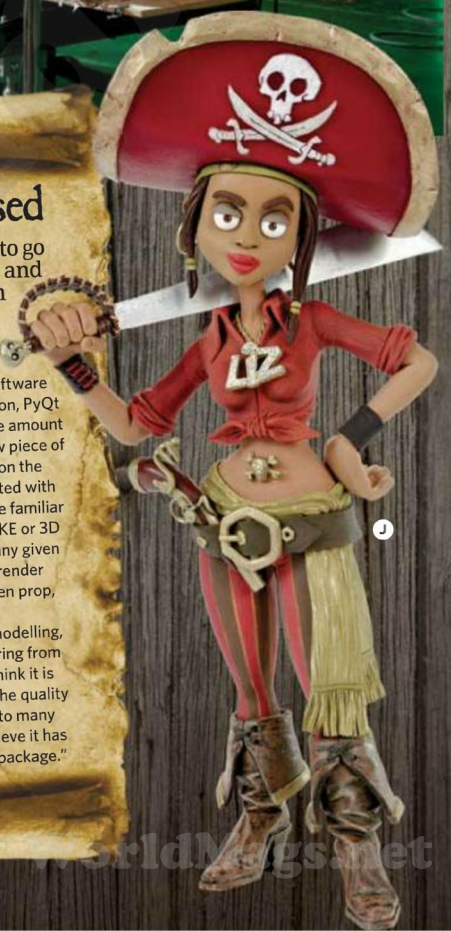
J "To a degree [using 3D printing] depends on what the project is, but... rapid prototyping is a very useful tool," says Loyd

The pirates get organised

Chris King discusses Aardman's decision to go with a Maya, RenderMan, NUKE pipeline and a custom-built asset-management system

"We decided to streamline the flow between software and artists," Chris says. "Our head of pipeline Tom Downes and CG supervisor Ben Toogood designed and built an incredibly reliable and artist-friendly piece of software named AMI (Asset Management Interface). Built in Python, PyQt and PostgreSQL, it was designed to... safely store the huge amount of data being created and be ready to incorporate any new piece of software added to the [process] with minimal impact on the structure. As it was built in Python it seamlessly integrated with Maya 2011, NUKE and enabled the artists to see the same familiar AMI front-end, whether they were loading comps in NUKE or 3D assets in Maya. TDs were able to track the pipeline for any given version of anything. For example, you could look at a render submitted for review and find out what version of a given prop, camera, or comp script was used to create it.

"Maya and RenderMan Studio gave us the value of modelling, pre-visualising, animating, tracking, lighting and rendering from one hub. I've used RenderMan for ten years and still think it is unbeatable in terms of total control and flexibility over the quality of your final renders. NUKE was a relative newcomer to many artists working on the project three years ago, but I believe it has now established itself as the leading film-compositing package."



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Less noticeable but equally as important was the use of CG to remove cut lines created by the 3D-printed mouths. "It was discussed that it might be worth keeping this cut line to add to the handcrafted feel of the film, but it was eventually decided that it was too distracting and it fell to the VFX department to paint them out. All 129,600 frames of them – and that's just with one character in shot!" Chris King, CG supervisor offers. "[S]ome great tools were designed in NUKE to simplify and speed up the process, and by the end of the project cut lines were being painted out quickly."

The Pirates! is not a normal film. All departments were working on it for many years, even before the story and script were locked down. Post-production summed around 18 months of work on 1,500 shots – plenty to keep busy with. "The very last shot of the film – the longest and most expensive of all of them – [was] delivered last," Andy wraps up. "When you see the film, you will see why – a huge VFX monster shot!"

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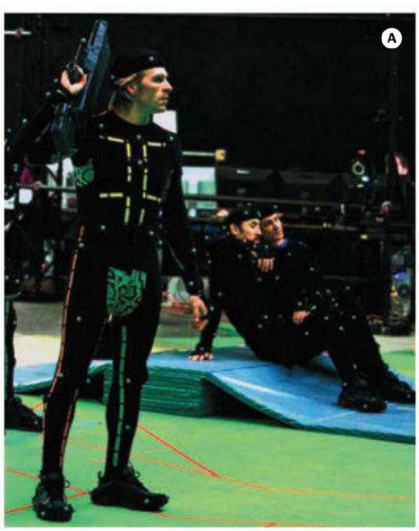
GOING THROUGH THE MOTIONS

Chris McMahon talks to the experts about motion-capture technology, how it's changing the industry and where it can go from here

In January of this year, Hollywood star James Franco made a plea for a fellow actor that five short years ago would have been dismissed without a second thought. "It is time Andy Serkis gets credit for the innovative artist he is," wrote Franco in an article for *Deadline*. "This is not animation as much as it is digital makeup. There are plenty of Oscar-winning performances that depended on prosthetic makeup to help create the characters: John Hurt's in *The Elephant Man*, Nicole Kidman's in *The Hours*, Sean Penn's in *Milk*. Those actors depended on makeup artists to augment the look of their characters, but the performance underneath came solely from the actors.

"Well, that's exactly the same position that Andy is in. His problem is that the digital makeup is so convincing that it makes people forget that he provides the soul of Caesar."

Franco was referring to Serkis's memorable performance as the hyper-intelligent ape in last year's *Rise of the Planet of the Apes*, a role to which the actor brought a subtlety and understatement never seen before in a digitally created character. So much so, that his role as a CG ape was considered for the same awards categories as Christopher Plummer and Max Von Sydow. An Oscar for a primate? That's where mocap is taking us.



What was once referred to as Satan's Rotoscope by detractors who considered the technology an affront to the artistry of traditional animation, is now becoming an increasingly popular approach to animation. This comes after a string of successful films, from *The Polar Express* through to *Avatar*, making use of motion-captured actors to transport the viewer to distant and imaginative, but also incredibly lifelike worlds.

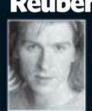
"The technology captures a high amount of detail quickly and immediately, which would take your average animator a large amount of time to animate fully," says Ryan Yee, senior animator at Sony Pictures Imageworks. "It can also speed up some of the more tedious tasks to animate, things like crowd or background animation."

Nick Fredin, animator at Weta Digital, is quick to evangelise the benefits the technology gives over directorial control. "Given the opportunity to change things and have full control over the shots, the director is free to adjust or vary any performance if it's not suited to the shot. Performance variations and timings can change to work better with a camera move or more in line with the director's vision. Nothing is set in stone. Everything's on the table."

It hasn't always been so easy, as motion capture actor Reuben Langdon remembers. "My first mocap job was on *Resident Evil*. It was on a wire magnetic system, so I was basically attached to wires and had a guy running up behind me to wrangle cables and make sure I wasn't getting too tangled up. It also gave us all a headache and we couldn't capture more than three hours without having to take a break, because there was a giant magnet that made [us] nauseous.

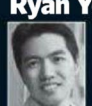
INTERVIEWEES

Reuben Langdon



Company Motion capture actor and stuntman
Projects worked on *Avatar, Resident Evil 5, Devil May Cry 3* and *4*
Software Motion capture technology
Website www.reubenlangdon.com

Ryan Yee

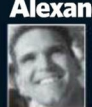


Company Sony Pictures Imageworks
Projects worked on *The Chronicles Of Narnia: The Lion, the Witch and the Wardrobe, Alice In Wonderland, Sucker Punch, The Golden Compass*
Software Maya, Houdini, Voodoo Proprietary Animation Software, Photoshop, After Effects
Website www.ryanyee.ca

Nick Fredin

Company Weta Digital
Projects worked on *The Adventures of Tintin: The Secret of the Unicorn, Watchmen, Rise of the Planet of the Apes, Abraham Lincoln: Vampire Hunter*
Software Maya, 3ds Max, XSI, Premiere
Website www.anickmation.com

Alexander Kiesl



Company Alex & Steffen
Projects worked on Vestel adverts, Snickers adverts, Alfa Romeo adverts, Honda Accord adverts, Bosch adverts
Software Motion capture technology
Website www.alexandsteffen.com

A Motion capture has been a huge boon to videogames, which often feature human protagonists and NPCs

B Inertial motion capture systems are slowly becoming more prominent. These systems use gyroscopes to measure rotational rates during an actor's performance

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> Mocap tech captures a high amount of detail quickly, which would take your average animator a large amount of time to animate fully

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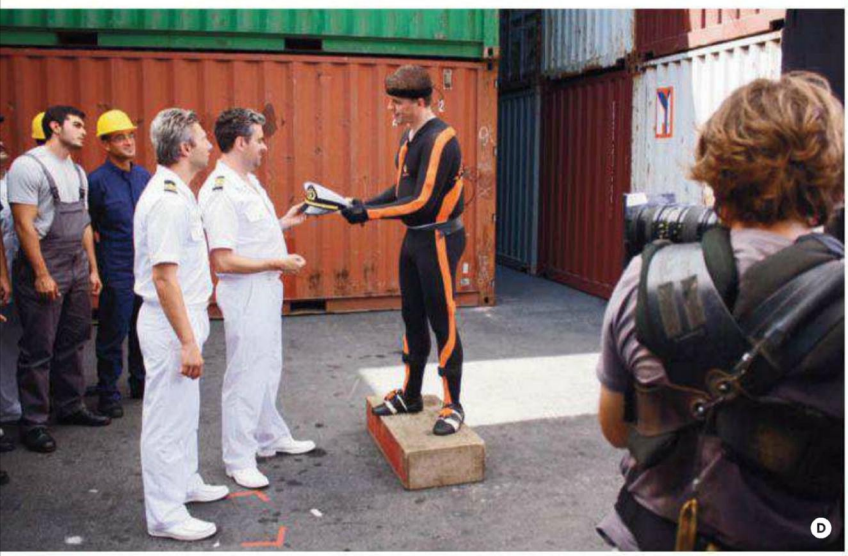

"Later there were optical systems, much like the ones used today, only in a much smaller area and the markers or dots were huge, like golf balls. They were also made of wood and left big welts every time I had to do a stunt and land on them. Nowadays it's all much easier. I still look silly in the spandex, but the markers are soft and there are no more headaches!"

So, with the ease-of-use and streamlining of the animation process, why are we not seeing every new animated feature released attempting to replicate the success of *Avatar* and *Tintin*? Well, as with any animation method, motion capture has its drawbacks. "It's not just a simple step of putting the data into the computer and voilà, hit Render and movie done," explains Fredin. "The capturing process isn't perfect. It has to travel through a very large pipeline before the animators even get to work with it, and once we do get the data there's still a lot to do.

"Sometimes you're lucky and the mocap works and you don't have to do much – other times nothing works and you have to create the shot yourself. Sometimes blinks need to be added to keep the character alive and avoid the Uncanny Valley effect. Other times, due to [shot] complexity, we have to work without mocap. An actor can't climb a 50-metre tree on a mocap stage as the camera follows them to the top. It'd be too dangerous and impractical."

It's lack of practicality that seems to be one of the biggest sticking points for mocap. The very nature of the technology means it can only be used in very specific ways – any attempt to work around issues often leads to more problems. "The captured data isn't always perfect, or the physiology of the actor being captured doesn't always translate well onto the digital character," says Yee. "I experienced the inconsistency of mocap with our work on *Alice in Wonderland*. They had Crispin Glover walk on stilts on set. As you can imagine, the end result didn't look very convincing with the motion-captured data. It was discarded and replaced with keyframed animation."

Alexander Kiesl experienced similar problems. "In a Snickers commercial named TAG [...] you see two biomechanical creatures chasing each other through a huge city jumping on and off cars, buildings and obstacles. It was impossible to use mocap as it would have become an endless back and forth of revisions, altering data and forcing the original mocap into something completely different. The mocap data we would have got out of a sessions with, say, a dog would not have been as action-packed and precise as we wanted it to be."

Another drawback of motion-captured data is that it is, in its current form, incapable of capturing the more intricate articulations and movements of the human body. Sure, the twitch of a head or slight shrug of the shoulders can be translated onto the screen, but the movements of the fingers, eyes or tongue all need to be added in post-production.

"It would be just great to get those nice and fine movements that contribute to the believability of a character," continues Kiesl. "Facials would also be more than great to get during a regular session, at least some jaw movements. You always have to animate these features afterwards, as most of the time hands have to interact with something, or just act. It all has to be adjusted accordingly."

This isn't always bad, Kiesl goes on: "Somehow you don't always want mocap data to be perfect, as we animators just love to tweak and change the hyper-real movements and bring real character into the animation." It's that sense of creativity, found in bringing a CGI character to life by hand, ensuring there will still always be a place for traditional animation in future Hollywood productions, no matter how successful or ubiquitous mocap becomes.

"Animation will always be about the caricature or exaggeration of life. That's when it

C Many markerless mocap systems are currently in development that do not require subjects to wear special equipment for tracking

D The biggest advancements in motion-capture technology are in portability. Many believe that soon, large interior mocap stages and multiple cameras won't be needed

E A current downside of using mocap technology is its limitations when dealing with more subtle movement. This means for now it still relies heavily on postproduction

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IN DEPTH

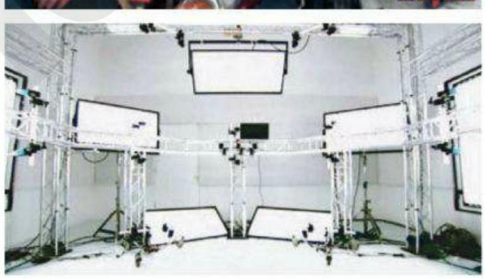
Depth Analysis' MotionScan technology hopes to change the face of games forever

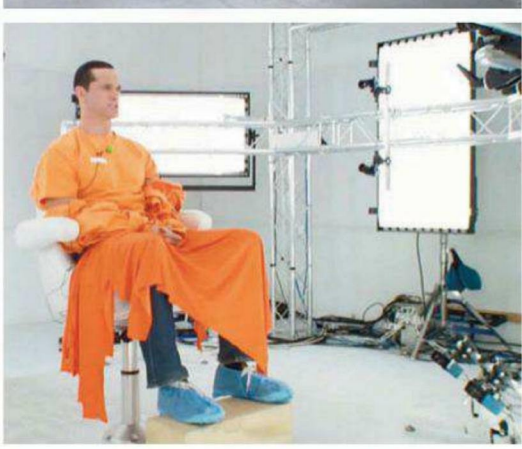
Mocap has played a huge part in videogames as well as film, with titles like PS3 titles like *Uncharted*, *Heavy Rain* and *Enslaved: Odyssey to the West* making extensive use of the technology (the latter of which featured Andy Serkis as the lead character Monkey).

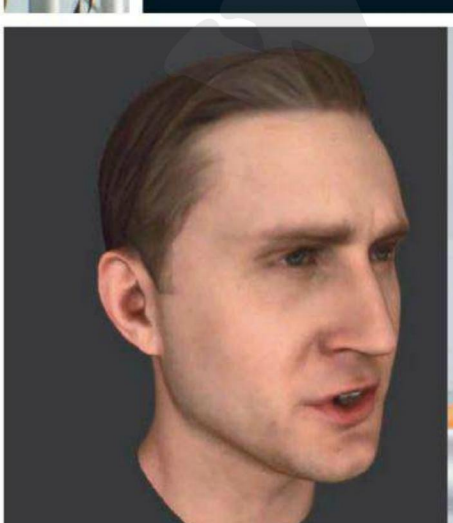
One of the most interesting uses was in last year's *L.A. Noire*, an open-world re-creation of Forties' LA in which players took on the role of detective Cole Phelps and solved a series of increasingly difficult crimes. A big part of this was the cross-examination sequences, in which players would need to work out whether their interviewee was lying or telling the truth. In order to make this element of the game work, Australian company Depth Analysis created MotionScan, a technology that uses 32 high-definition cameras to capture actors' facial performances without the need for any markers. Every subtlety and nuance on an actor's face can be captured and integrated into the game, meaning for the first time ever players could determine their suspect's real motivations simply by reading their face.

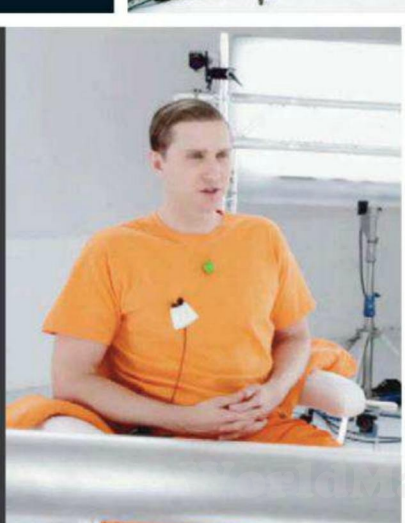
The technology still has its problems – the actor must sit incredibly still during the performance, with the actions of the body captured at a later stage. This often results in a disconnection between the character's incredibly realistic features and the motions of their body, causing an 'Uncanny Valley' reaction in viewers. Still, it's a step towards suitless motion capture, which is great news for all those actors out there who don't relish the prospect of squeezing into revealing spandex suits.

> "Every subtlety on an actor's face can be captured and integrated into the game"









Facial motion capture usually occurs after the full performance on the mocap stage, but it's becoming common for some facial data to be taken at the same time

F

G

feels organic," says Yee. "Mocap and previously rotoscoping, in traditional hand-drawn animation, can't capture the same feeling on its own, at least not yet. Mocap still has its limitations on what animals or creatures can be convincingly captured. An actor performing as a lion wouldn't be very successful, while a digital character in the hands of a talented animator is limited only by the creativity of the artist."

This is why companies like Pixar stand by traditional keyframe animation. For this company, the warmth and caricatured humour inherent in characters like Woody is something that can only come from the imagination – use a real human's actions to drive the performances and most of their charm would be lost in the gulf of the Uncanny Valley.

Mocap is never going to be an industry-wide solution to speeding up the animation process. When used in the right circumstances – such as *Avatar*, a film designed around breakthroughs in the technology – motion capture can truly sing. But it's a tool, and as such will only ever be useful for what it's designed for.

So motion capture's not going to be putting any Pixar animators out of a job any time soon, but where is it heading? Well, as with CG tools and game development, democratisation of the tech is key to seeing it evolve. "Giving lower-budget films the opportunity to utilise mocap the way that a large studio can would be phenomenal," says Fredin. "The concept is a bit intangible at the moment but it will happen. Being able to record data without huge, cumbersome setups is a step in that direction."

Yee agrees, "Markerless mocap and burgeoning developers who are taking advantage of less-costly alternatives like the Xbox Kinect is furthering exploration and innovation," he says. "But as much as the tech is getting better, the artists are also improving their craft. Having dedicated schools like Animation Mentor and iAnimate are producing animators who are better and faster. At its highest quality level, we're seeing a blurring of the lines between keyframed animation and motion-captured performances."

> "Mocap has its limitations on what animals or creatures can be convincingly captured"

Kiesl meanwhile is quick to praise the emergence of new systems, such as inertial rather than optical mocap setups. "As we now have our own inertial system from Xsens in-house we have to admit that we prefer freedom of movement over extreme precision of movement. It fits way better into our workflow that we have the usable data a couple of minutes after the mocap session rather than waiting for a longer time. Then there's the biggest advantage of all: portability," he continues. "Unlike an optical system you can just carry your inertial system with you and actually use it on set. The inertial systems have evolved heavily and we can already see that the software interpreting and reading the sensors is only getting better."

But will better tech ever convince the Academy that Serkis should get his Oscar? Who knows, but he ought to use his speech to thank the animators that helped bring the performance to life if he does. As the tech continues to evolve, we're no doubt going to see it used in ever more innovative ways in new films. However, it will always be a collaborative effort from the actors themselves right through to the animator whose job it is to add the blinks.

"Mocap is a powerful tool that the actor and animator share to make an onscreen performance the most powerful it can be," says Fredin. "But what really matters is the end result, and how the audience reacts emotionally to the combination of so many people's efforts. It's not a precise science or art. Nor should it be. It's a territory that isn't defined by the classic paradigms of film and animation. It really is the Wild West of digital filmmaking."

F While the stage for the mocap setup often looks quite sparse, there's a big world of possibility

G Even in the cases where mocap data isn't used, animators will often keep performance at hand

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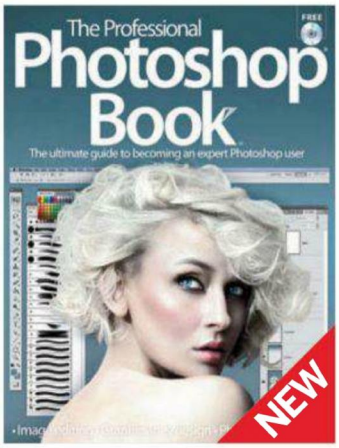

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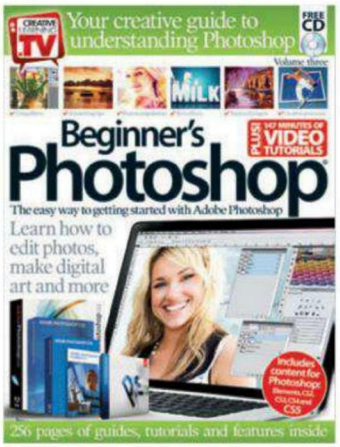
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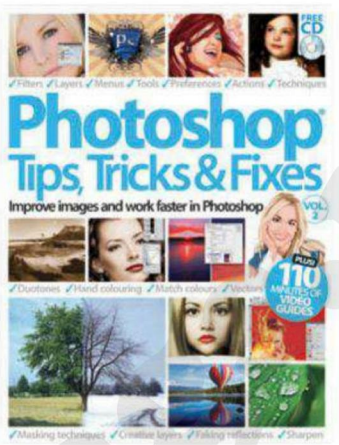

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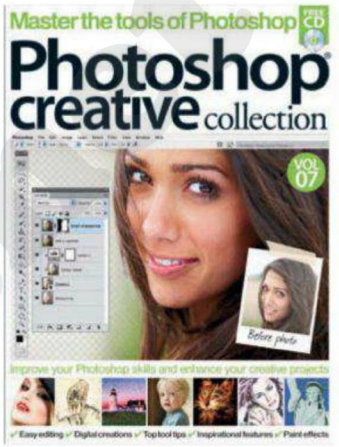

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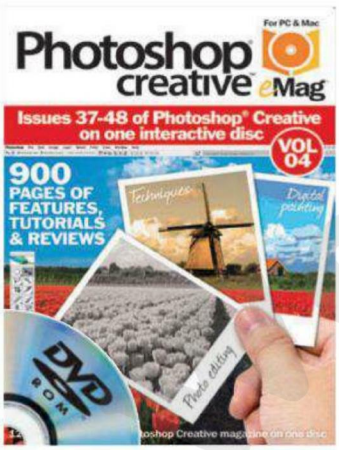
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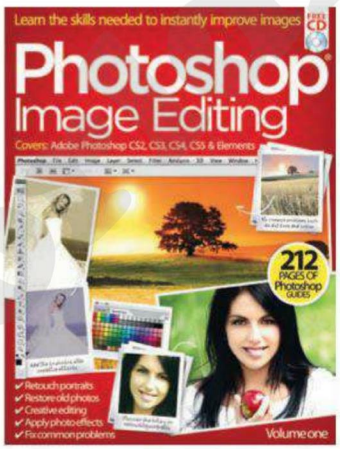

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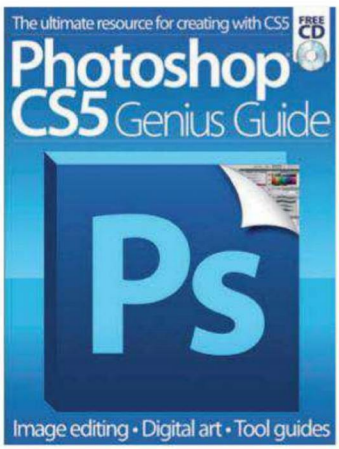

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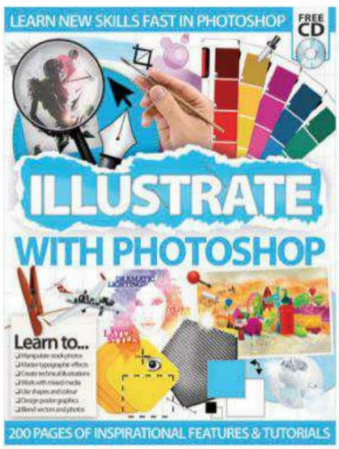

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Kim Stapleton
3DArtistOnline

Website
http://ev-one.deviantart.com
Country Australia
Software used
3ds Max, V-Ray, Photoshop

> Making these textures in Photoshop was probably the most time-consuming element of the entire process

> The scenes are really just light and shadow explorations of the timber material, so making sure the wood was represented realistically was key to these images

Software used in this piece

3ds Max | V-Ray | Photoshop

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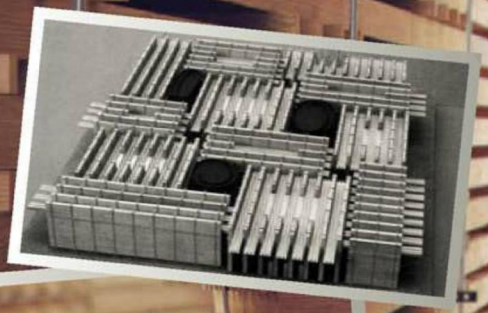
> The timber had to look random in nature, not tiled, so I had to make up large-scale, high-resolution multi-textures. [I applied] them to each individual row unit and then randomly across the units so they did not appear tiled in the larger exterior views



> I really wanted to get up-close with the timber so you could see the details worked up in Photoshop – particularly the edge faces and so on. Depth of field helped show this level of detail in a much more realistic manner

> Each shot has its own optimal focal distance, dependent on the intended highlight detail. This is achieved with a V-Ray ZDepth pass in the rendering elements that was then imported into the [DOF PRO] Photoshop plug-in. The focal distance can then be adjusted on the fly to achieve the most realistic-looking effect for each shot

Swiss Sound Box 2012

I've loved this project for quite some time and I decided to work it up in 3D when I found out this building no longer existed in real life. I actually started these images a few years ago but lost track while working on different projects, finally finding the time to finish them earlier this year. I love the details, the language of materials and the confronting nature of the forms.

Master arch vis

House – stage one 2012

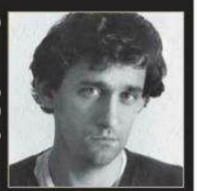
"Lech Sokolowski explains how to create a place of residence from architectural plans"

Lech Sokołowski is a self-employed 3D generalist based in Poland

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info



Lech Sokołowski

3DArtistonline

Username: lechu

Personal portfolio site www.no-triangle.com

Country Poland

Software used Blender

Expertise Considered a 3D generalist, Lech most enjoys the compositing and postproduction stages. He has worked as a freelancer and as a 3D artist at Evermotion. He currently runs his own studio based in Poland.

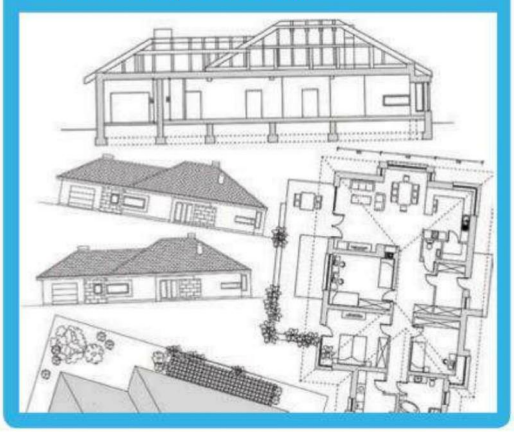
In the first of this three-part tutorial, we'll be learning how to handle a professional architectural visualisation project using the free and open-source 3D software, Blender. This first part will include some very useful techniques for creating the building's model, which will be based on architectural drawings and sketches. When working in a studio or architectural office, you'll often be given plans like these by the client or your manager. Having a good knowledge of how to quickly apply these drawings in your 3D environment and later create a precise representation of the 2D concept is highly valuable.

The most popular file formats for saving technical drawings are DWG and DXF, which can be created by almost any CAD software. While Blender supports the DXF format pretty well, probably the best, fastest and most reliable way of working with these types of information is using CAD data exported to a PDF or JPG file. I prefer the PDF output as it can be processed later using 2D software and saved in any resolution without losing quality.

For the purposes of this tutorial, I've already created some JPG files ready to be imported into Blender. However, if you would like to practice on raw PDF data, these can also be found on this issue's free disc.

Concept

The plan for this arch-vis project is to build a standard, one-floor family house. These types of jobs are commonly available in studios or as a freelancer, so once you've got the hang of this house style, you'll be able to apply what you've learnt to more complicated buildings.



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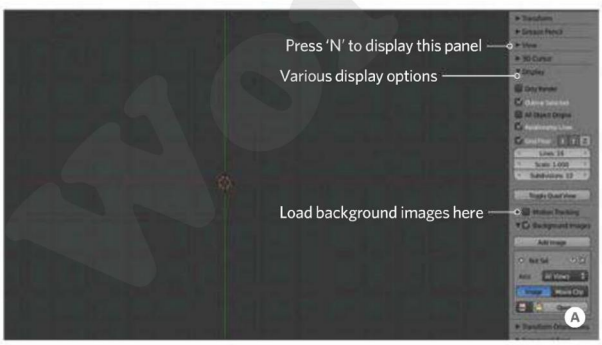
Part one
Modelling
Texturing

On the Disc

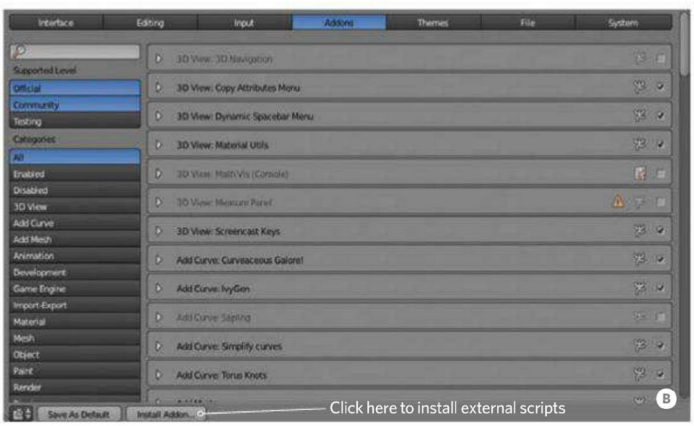
Building plans
Finished model of the building
Helpful modelling scripts

Software used in this piece

Blender



01 Prepare the workspace Before we start with modelling, it's a good idea to set up the Blender workspace the way you like it. By hitting the N key while in 3D view, you'll open a Display Properties panel in which you can load a background image. Unfold the Display Options and click Toggle Quad View. This will subdivide your 3D window into four orthographic views. This should work perfectly if you have a more technical approach to the 3D geometry. I personally prefer to work only in one big window and change the views by using numerical keys A.



02 Load additional plug-ins Blender's modelling tools are still under heavy development, so I'd suggest using some external plug-ins created by the community. Hit Ctrl/Cmd+Opt/Alt+U to open the User Preferences window. Choose Addons and at the bottom of the window click Install Addon. Now select the 'mesh_bevel.py' and 'mesh_knife.py' files that can be found on this issue's free disc (these are free to use and can also be found online). After that remember to switch the tools on by finding them in correct group on the left-hand side of the screen. We'll be using these two quite a lot, so double-check everything has been set up correctly B.

A Pressing Ctrl/Cmd with the left or right arrow keys enables you to quickly alternate between created workspaces

B Not every supported add-on is immediately available by default after Blender's installation

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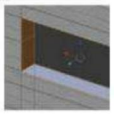
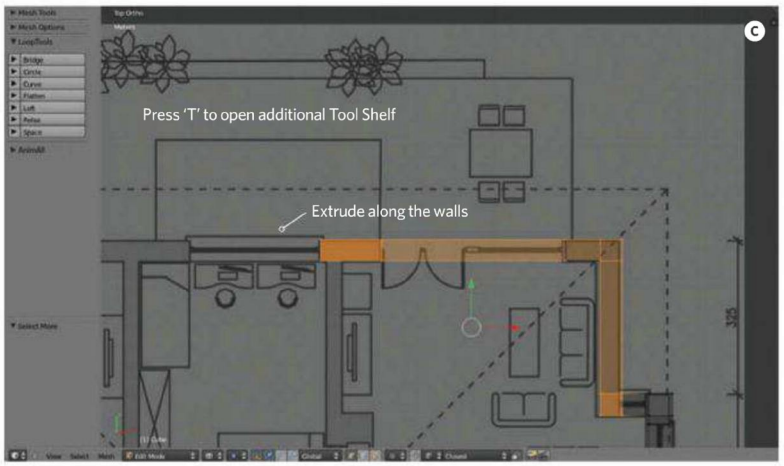
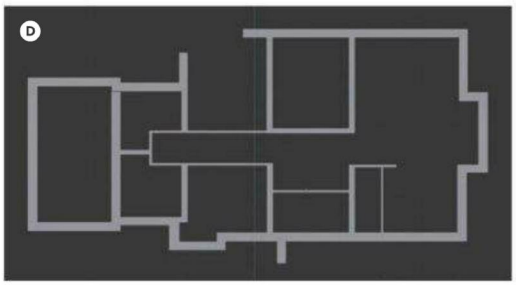


Start the basic structure

Create basic geometry and begin window details



03 Begin with basic geometry With everything set up, create a simple plane and scale it up by about 20 times. Now add a cube and enter Edit Mode. With the 'floor_plan.jpg' file from the disc set as the background, start extruding one of the faces along the outer walls of the building. Don't be bothered by the cube's height at the moment, we'll set it up later. While extruding try to mark all the openings, windows and doors by hitting E just where they appear on the building plan C.



04 Place interior walls We need to create inner walls inside the house so it won't look totally empty later when rendering. The techniques are pretty much the same as in the previous steps – create a cube, enter Edit Mode and, by moving and extruding the faces, cover all the areas. We'll leave the interior very simple for now and will come back to it much later if some additional changes turn out to be necessary D.

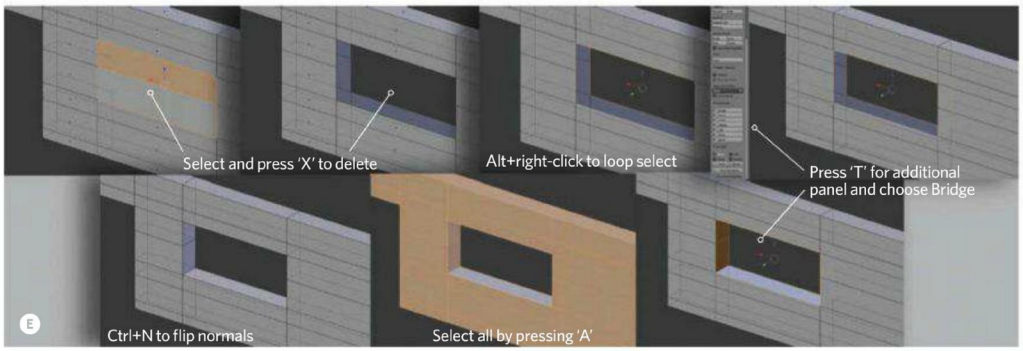
C Press T in 3D View to open a panel with more options

D You can add a ground plane object for better scene navigation in later steps

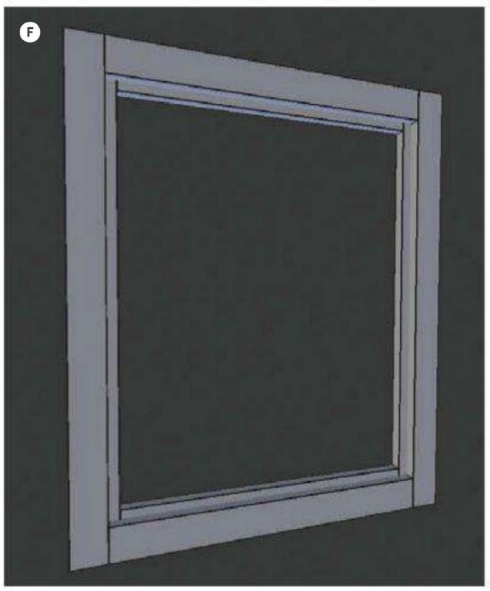
E Hold the Alt/Opt key while selecting edges to mark at once

F For the best effect it's good to have some reference images of the object you're modelling

05 Refine the walls From the disc, open the 'elevation_front.jpg' drawing and set it up to be displayed in Front Orthographic view. Scale both the interior and exterior walls and match them to the lines representing the top and bottom edges of the walls. Next, select the outer walls and enter Edit Mode. Press Ctrl/Cmd+R to create edge loops and match them to the window lines marked on the drawing. Repeat this process for each elevation and delete the faces, making the window openings. To join the interior and exterior edges in each opening, select them and click the Bridge button under the LoopTools list, located in the 3D View Tool Shelf (hit the T key to reveal the list) E.


Select and press 'X' to delete
Alt+right-click to loop select
Press 'T' for additional panel and choose Bridge
E
Ctrl+N to flip normals
Select all by pressing 'A'

06 Add window models The window dimensions differ quite a lot in each elevation, so to speed up the work we'll create just one basic model, and then copy and adjust it to each opening. Create a cube, scale it down several times and place in the corner of one of the holes. Enter Edit Mode and create a window frame by scaling and duplicating the cube. Repeat the process and create a smaller frame inside the window for better detail. Last, apply the Bevel modifier (hit W to access) but first, go to Object Mode and press Ctrl/Cmd+A to zero the scale of your model F.



Problems and solutions

Creating the outer walls was a good starting point for the upcoming steps. Now we'll be adding more detailed objects like windows, doors and roof elements. It's good to plan your work ahead, as a good management of all your objects is essential when working on bigger projects. Blender gives us a basic yet very handy layer system, which can be accessed by pressing the M key. While continuing, try to sort all the elements into separate layers. This will help you in hiding all specific parts of the building, windows for instance, or viewing only solid elements like the walls and ceiling. Tweaking the display options may also be very helpful. Enter the Object menu in your Properties panel, and under the Display list, change or enhance the ways your geometry is displayed. Clicking the Wire type of display creates a wireframe grid, covering the shaded, normal-looking model. This is very helpful especially when adding new elements in Perspective Mode.

In order to quickly distribute the objects through the scene, just model one of them and later duplicate it into the desired areas. Of course the duplicate will require some tweaking and adjusting, but it's much faster than making every window from scratch, for example.

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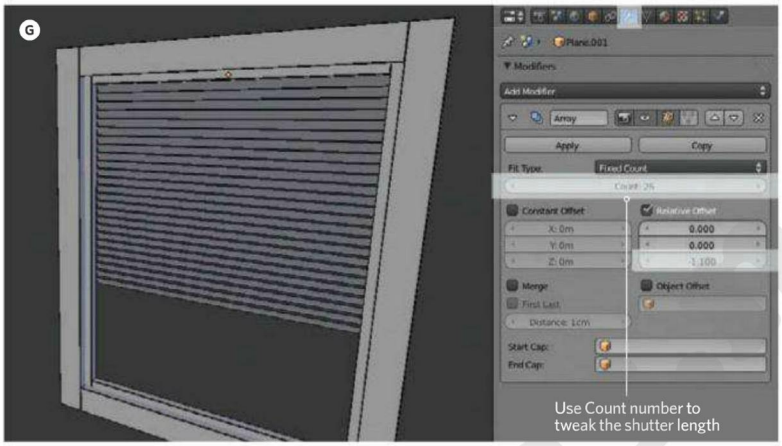
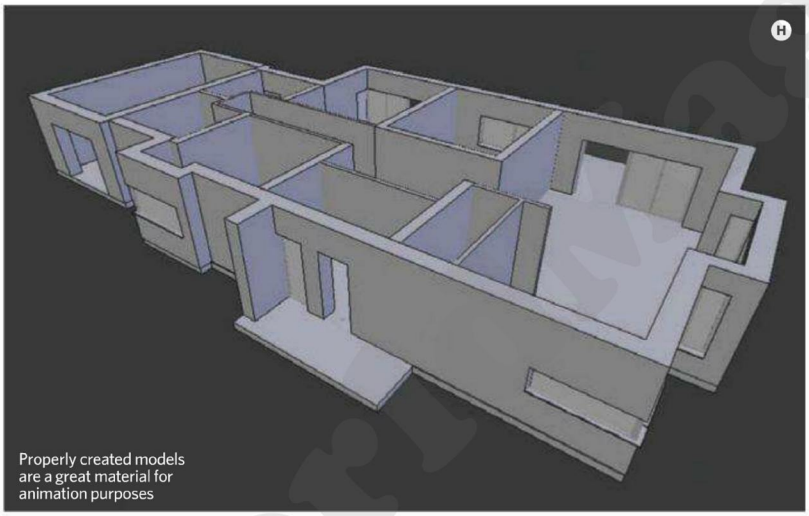
Detailed modelling

Add more specific features to your elements

07 Window details

Create another cube and by simple scaling operations, create a thin glass surface. Duplicate it, select both objects and hit Ctrl/Cmd+J to merge them together. Now create window shutters. Add a plane object and scale it according to the window dimensions. Rotate it slightly in Edit Mode and add an Array modifier. Adjust the Relative Offset settings so the plane duplicates in the Z axis and increase the Count number to 20. This way you can now randomise the length of each shutter in just a few clicks G.



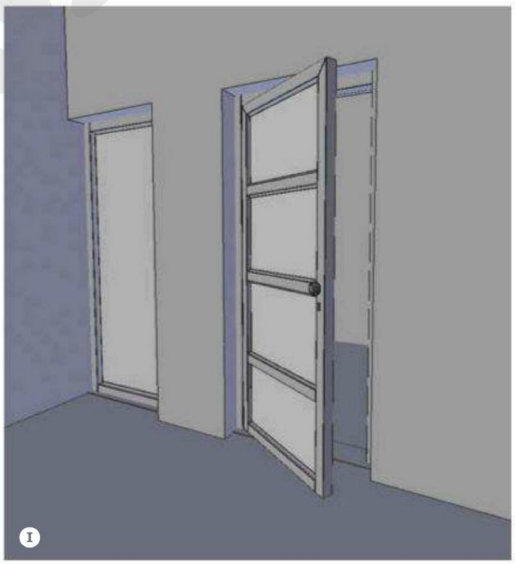


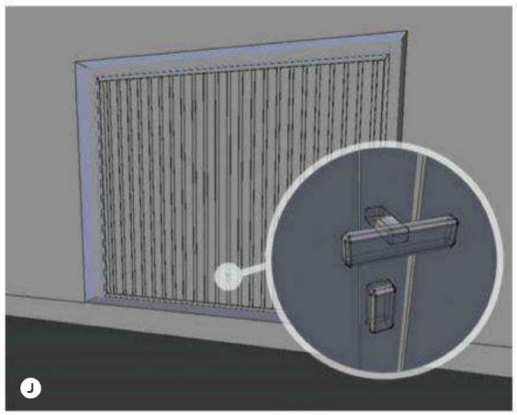
08 Scene-creation tips

Although the final result would probably consist only of one image, it's a good habit to approach your scenes and models globally. Your client might want to see their building from totally different perspectives and if your model lacks significant details at this point, you might get into trouble. Modelling everything from scratch is time consuming, so it's common for designers to reuse models from past scenes or even to buy some pre-made objects online. There are also many websites sharing great models for free H.

09 Model a door

The door modelling techniques are pretty much the same as with the windows. I've even used the basic window shape to create the entrance door model. Enhance the frame by removing the bottom element and add four horizontal slats to make the doors differ from the windows at some points. However, the balcony doors are still very similar to the base shape I.





10 Add a garage door

Copy the entrance door frame and edit it to match the wall opening. Create one thin, vertical element and use the Array modifier to duplicate it several times. Add a plane object and place it behind the arrayed boxes. Apply the modifier and join the parts together. Create details by adding and scaling cube objects and applying the Bevel modifier J.

G Pressing Shift with one of the axes (X, Y or Z) while scaling, moving or rotating, will exclude this axis from operation

I You can diversify the model by opening some of the doors

J You can soften the edges using both Bevel and Subdivide Surface modifiers

Find a proper detail balance

When working on your scene, it's very important to find a proper balance for details you're going to add. Focusing on some elements too extensively is time consuming and might result in you not finishing the project on time. You may also overload your scene with surplus geometry and cause significant viewport slowdown. Adding some basic enhancements to your models, like the ones we've created in previous steps, should work fine in most cases. However, you may also encounter a situation when a client requires high-resolution renderings or close-ups on some elements. If possible, it's best to have good-quality models already prepared for that kind of project. This saves you a great amount of time and enables you to make quick changes during the project. The scene handling also requires a different approach. As mentioned earlier, use Blender's layer system to distribute the models properly, for example, according to the view location. It's not necessary to overload your viewport with objects that are not visible at the moment, so disable their layer.

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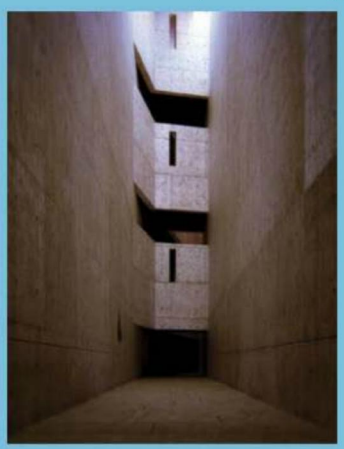
Artist showcase

Lech Sokołowski

I am an architect by education and 3D artist by passion. Since my youth I was interested in various forms of expression, especially drawing. My adventure with 3D graphics started during my studies and I've quickly fallen into it. Currently I run my own 3D graphics studio, NoTriangle, and live a happy life in a quiet, mellow region in east Poland.

Art Gallery **3ds Max, V-Ray, Photoshop (2010)**
This is one of the interior scenes I prepared when working in the Evermotion studio. My task was to create a set of complete 3D environments for various product-rendering purposes.



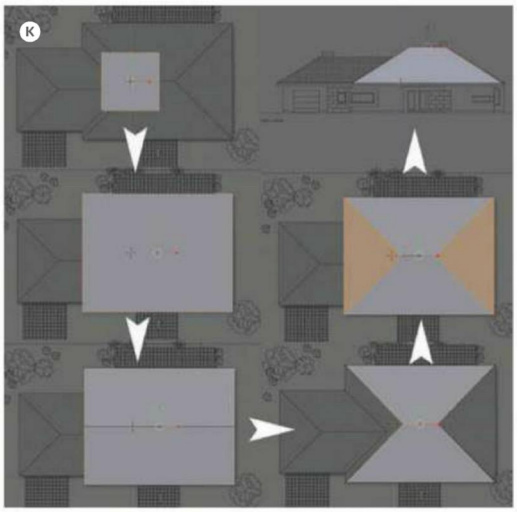
Jewish Museum, Berlin **Blender, V-Ray, Photoshop (2011)**
This scene was created for light study purposes. I always found this building very touching and inspiring and still look forward to finishing a CG animation project regarding it.

Youth Hostel Interior **Blender, Cycles, Photoshop (2012)**
This image shows the interior space of a building designed in our studio. It's a multi-functional youth hostel located in one of the natural parks in east Poland.

Create the covering

Focus on modelling the roof

11 Basic roof model To start the roof correctly, let's first create the basic shape. From the disc, load the 'roof_view.jpg' image into Blender's viewport and create a simple plane object. Subdivide the edges marked on the image and move the newly created vertex into proper position. Now select the triangle vertex shape and hit the F key to create a new triangle face. This way we've made a roof surface that only needs to be edited in the side view. Select middle vertexes, switch to Orthographic Front camera and move them up as on the drawing (K).



Final touches

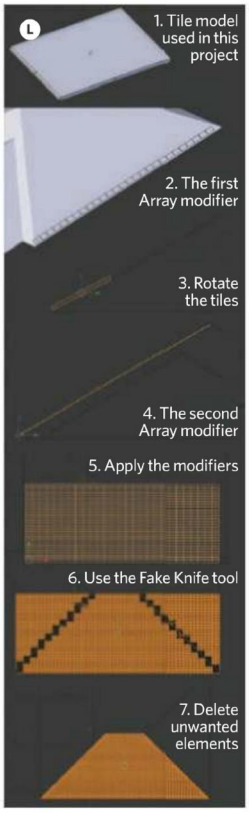
Angle profiles are the most important roof elements, yet we still need to add some details. Using the very simple techniques described earlier, I've created the chimney model and some additional roof details like gutters to improve the final look. I've also added wooden finishings at the bottom surface and edge of the roof.

(K) The roof consists of two similar models so we just need to duplicate one we've created

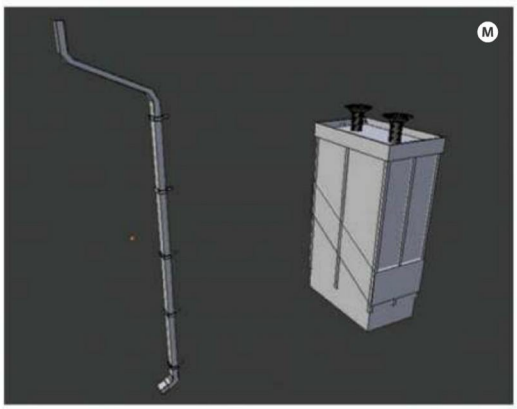
(L) Cut tiles will have uncapped surfaces, but we'll cover them with other elements

(M) You can include simple details by adding edge loops, beveling them and using the Solidify tool to extrude

(N) If possible, try to find any reference pictures similar to the project you're working on


L
1. Tile model used in this project
2. The first Array modifier
3. Rotate the tiles
4. The second Array modifier
5. Apply the modifiers
6. Use the Fake Knife tool
7. Delete unwanted elements

12 Add roof tiles Create a rectangular roof tile by scaling the cube object and soften its edges by applying Bevel in Edit Mode. Rotate the tile matching the roof angle and add two Array modifiers. The first one will duplicate the tile along the wider roof edge and the second will multiply all these tiles upwards. Tweak the Relative Offset settings to match all the duplicates. Switch to Top Orthographic view and apply the modifiers. In Edit Mode, select all the elements, hit W and pick the Fake Knife tool. Cut the tiles along the roof edges and delete unwanted parts (L).



13 Roof details Create the angle profiles to cover the uncapped faces of the cut roof tiles. Duplicate one of the cross edges of the main roof model, hit the P key and choose Selection Only to separate the edge. Enter Edit Mode and extrude the edges upwards. Press Ctrl/Cmd+F, choose Solidify and extrude the element in two directions. Select the external vertexes both in the upper and lower part of the model, and move them down a little (M).

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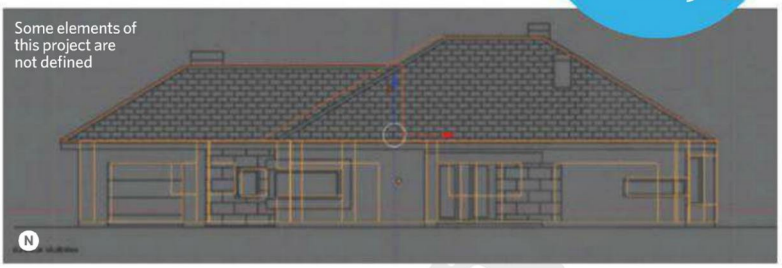
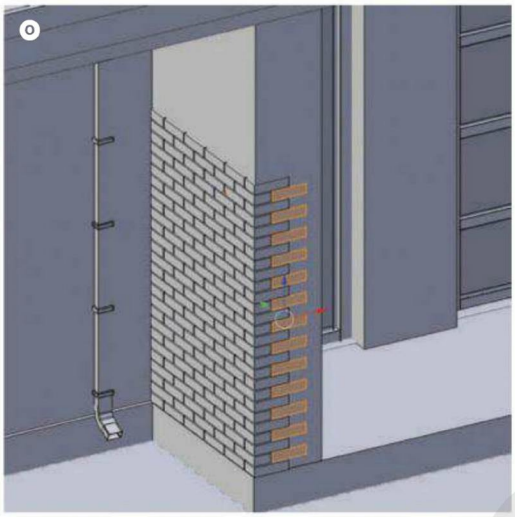
Detail the elevations

Focus on the elevation enhancements and final touches

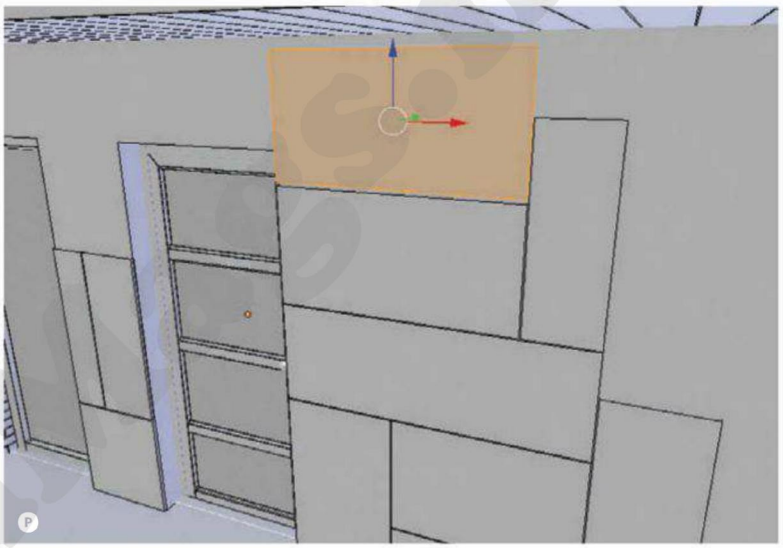
15 minutes render time
Resolution: 5,000 x 2,500

14 Project options It happens quite often that you have to visualise projects that aren't fully finished and defined. A client might want you to take responsibility and create some of the elements by yourself. In our example, we have very basic elevation drawings so let's use this as an opportunity to practice. I'll be using three finishing materials: plaster, bricks and stone tiles N.

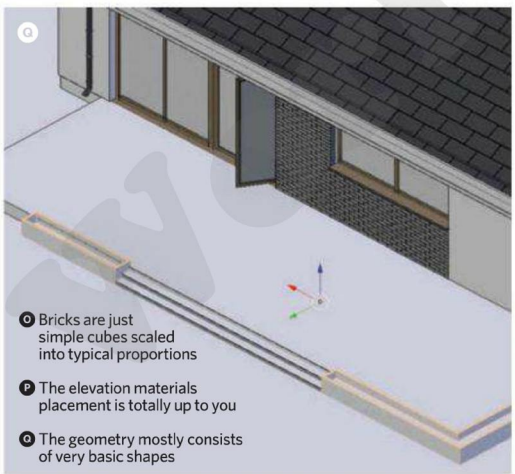




15 Create the bricks I've decided to create the brick elements in the entrance area. Although these are very repeatable, I won't be using the Array modifier this time. Bricks are usually aligned to certain pattern and almost always need manual refinements when creating the corner sections or openings. We could use a texture for this, but a real model representation of each material will yield better results O.



16 Input stone tiles As you'll notice, we're using the same, very basic techniques for creating most of the elements. The tiles won't be an exception. Start from the simple cube model and, by scaling and duplicating, create a few tiles of different dimensions and match them up. While in Object Mode, join the elements together, zero the scale by pressing Ctrl/Cmd+A in the Scale options and apply the Bevel tool in Edit Mode P.


Q
O Bricks are just simple cubes scaled into typical proportions
P The elevation materials placement is totally up to you
Q The geometry mostly consists of very basic shapes

17 Additional elements To make the building look complete, we need to add some final objects. Start creating a garage driveway by editing the cube and moving its vertexes under the ground plane surface. To create entrance stairs just add another cube, match it properly and use some of the stone tiles to make the covering surface. Copy the whole element and create the terrace by applying some simple adjustments. You can also create the flower bowls around the terrace, but the vegetation will be widely covered in the next issue Q.

Coming up next

In this tutorial you've hopefully learned some essential skills on how to approach and manage a standard architectural rendering project. In the next issues we'll be covering the environment setup, different types of vegetation, scene enhancements together with Shaders, rendering and final postproduction. Hopefully you'll stay with us and find out what amazing things can be done using free and commonly available software.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Riccardo Zemo
3DArtistonline

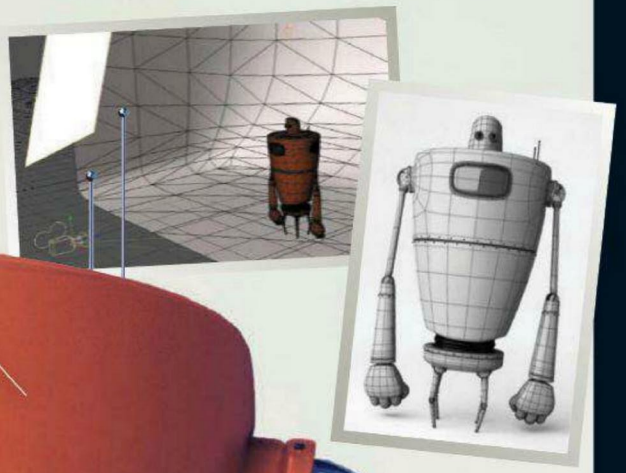
Website www.kidqube.com
Country Italy
Software used LightWave, Photoshop

"I kept the materials clean and simple to give the robot an overall light look despite his big size"

Software used in this piece

LightWave Photoshop

"The robot has shapes and elements influenced by retro design. I researched photographic film used for vintage effects and then re-created it in Photoshop with a simple gradient layer over the image"



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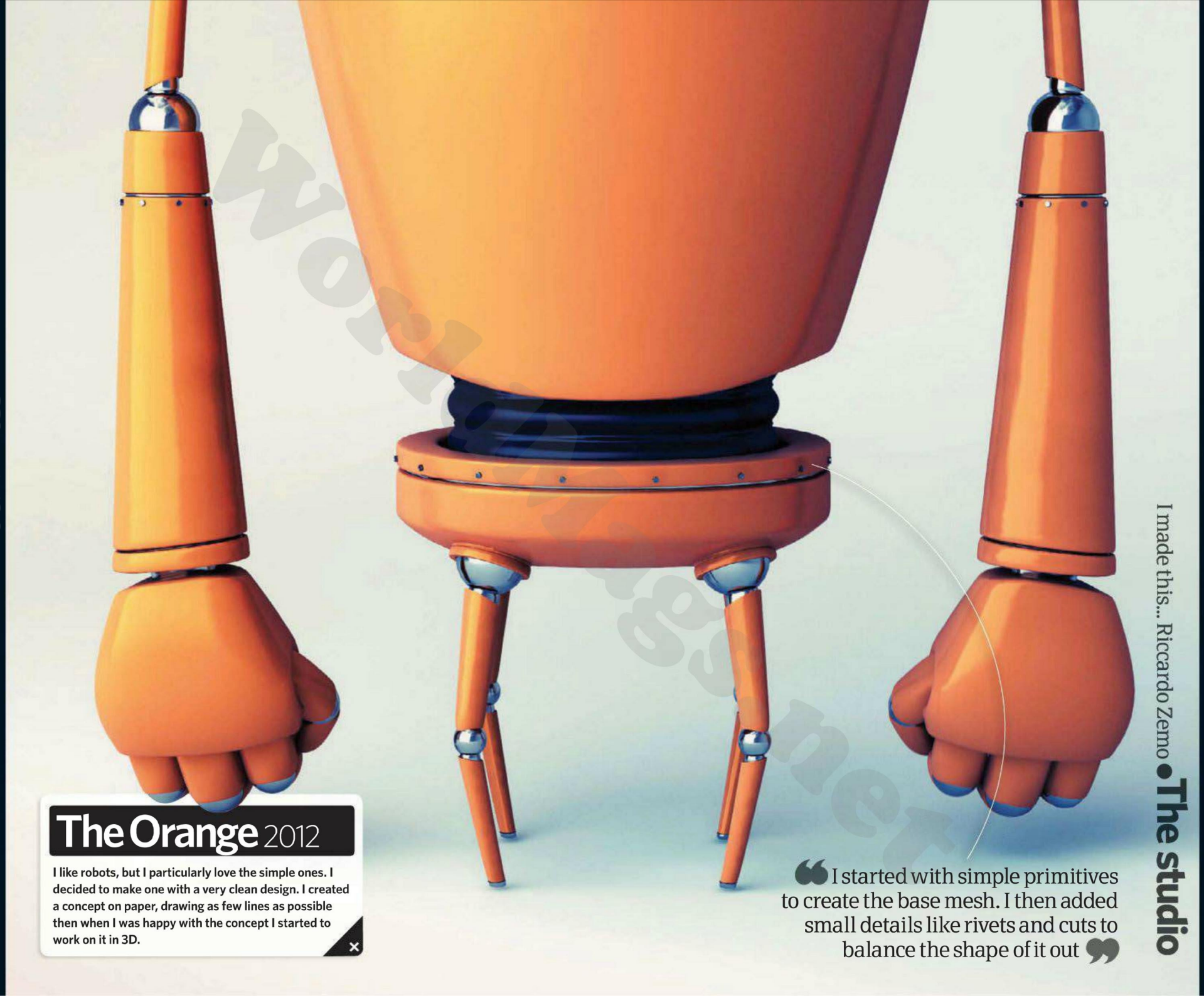

The Orange 2012

I like robots, but I particularly love the simple ones. I decided to make one with a very clean design. I created a concept on paper, drawing as few lines as possible then when I was happy with the concept I started to work on it in 3D.

I made this... Riccardo Zemo • **The studio**

"I started with simple primitives to create the base mesh. I then added small details like rivets and cuts to balance the shape of it out"

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Realistic product visualisation in modo

Luxurious Fountain Pen 2012

Achieve high quality, photoreal renderings using modo's Pixar Subdivision Surfaces, built-in assets and environment lighting

Wojciech Portnicki is a 3D artist who specialises in product visualisation and hard-surface modelling

This tutorial will provide an insight into my workflow for this elegant fountain pen. It was modelled as part of my personal portfolio. I wanted to achieve something detailed and realistic. Over the next few pages I hope to walk you through the whole process of creating the image: from modelling the pen nib, to applying UV, texture creation, simple light settings, tweaking the camera, and finally to the render settings.

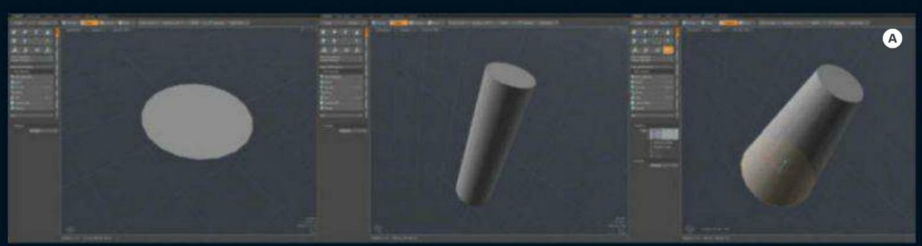
To get really smooth results with geometry we'll be using Pixar Subdivision Surfaces (PSub). The benefits of using PSub is that it offers great features, such as Refined Edge Weighting and smoother surfaces with vertices holding more than four edges (which we normally avoid, but sometimes it's acceptable).

We'll also use one of modo's greatest features: built-in assets. You'll see how easy it is to get great-looking materials and lighting with just a few clicks. Meanwhile, Illustrator and Photoshop will be used for texturing.

While the modelling of the pen's upper part is not covered in the tutorial, or in the final image, it's essentially a 20-sided cylinder with three indents at its base, so you could add it to your own version if you feel inclined.

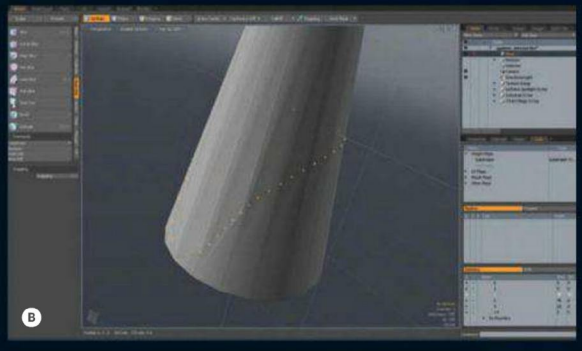
Begin the modelling

Start out with a 20-sided cylinder



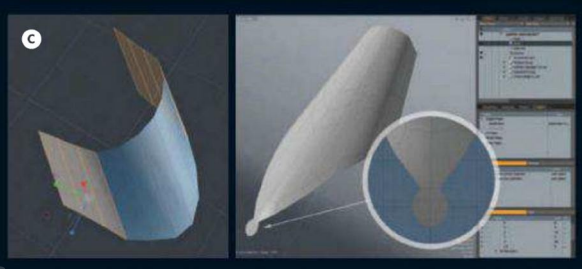
01 Cone-like cylinder I always like to start my modelling with the parts that look hardest to model – that way, it's always downhill from there. When you look closely at the nib it's just a cylinder curve-sliced to the desired shape. Start off by dragging out a 20-sided cylinder. The dimensions of my original mesh were out of scale (1,400mm tall and a radius of 190mm) but don't worry about that now, you can scale it down later on. Select the bottom ngon and scale it uniformly to 220% on XYZ A.

02 Use the Curve Slice In Left view select the Curve Slice tool (in the Mesh Edit tab). Draw a curve through the nib. In Wireframe view you'll see the tool has produced extra points in our geometry to hold the curvature of our slicing. We don't need these points as we'll be Subdividing the mesh so it can't have ngons. Go to Info & Statistics, expand Vertices By Polygon, hit + next to the 2 value then Delete. All the unwanted vertices are gone. Now delete the extra polys we're left with B.



03 Flatten the sides Grab three polys on each side of the mesh. Hit R for the Scale tool, set the Action Center to Local and use the blue handle to flatten the surface off (ensure your Negative Scale is unchecked).

Now hitting Alt/Opt+C, add three edge loops in the middle section and one at the bottom. Draw out a circular shape for the tip and connect it to the base mesh. You can do it by using the Edge Extend tool or using the Pen tool C.



A It's often best to tackle the hardest bits first on a task – that way everything gets easier as the project progresses

B Time to delete the unnecessary polygons. Head to Info & Statistics to do this

C Use the Edge Extend tool or the Pen tool to give your nib a tip

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Modelling
Materials
Lighting

On the Disc

Textures, modo project files (also EPS and AI files for the patterns), high-res renders

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Wojciech Portnicki

3DArtistonline

Username: Wojtek

Personal portfolio site
www.behance.net/auror

Country Poland

Software used
Illustrator, Photoshop, modo 501 SP6 (64-bit)

Expertise Product visualisation and hard-surface modelling

Concept

Reference is very important when it comes to re-creating real-world objects in 3D. We're not doing a specific pen model, but we want it to look real. I often start with browsing image searches online for pictures I like and compiling them into a reference folder. From what I've gathered up I then work out a couple of design choices I like: old-style ball nib, gold and silver sections, plus geometric engravings.

Software used in this piece

modo Illustrator Photoshop

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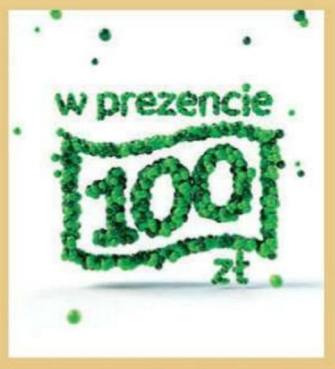
Artist showcase

Wojciech Portnicki

I'm a 27-year-old graphic designer with a passion for 3D. I try to incorporate renderings into my workflow as often as possible, creating advertising illustrations for my clients. I always seek out opportunities to do more and more 3D in everyday tasks. My goal is to join a professional 3D studio some day.

1 Million PLN Credit Card **modo 501, Photoshop (late 2011)**
I did this illustration of a prestigious credit card with a 1M PLN credit limit for a private bank. It's the first, real metal credit card in Poland. The magazine ad said 'How much does 1,000,000 PLN weigh? – Just 27.5 grams.' The illustration was delivered in less than two days – modo handled it like a champ.

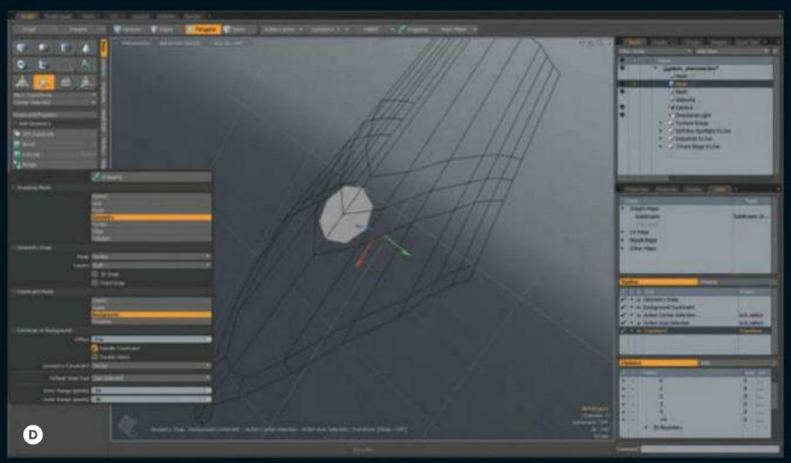
Retro Tickertape **modo 501, Photoshop (2011)**
My first major modelling task. This tickertape was made for an online line of credit calculator. The tape coming out of it was animated in Flash, printing out the result of the calculations. In order to achieve the proper reflections, I built a small room around the tickertape with walls textured using photos of an actual bank's office.



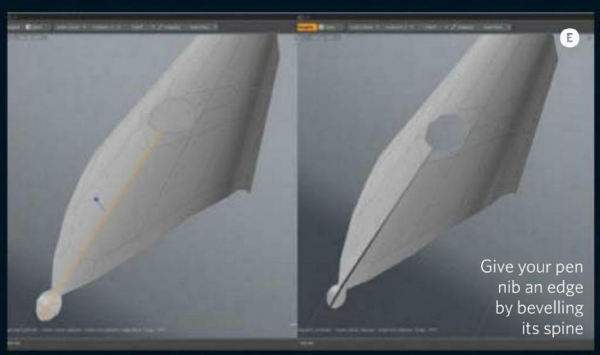
100 PLN Bill **modo 501, Photoshop (2012)**
Another illustration for a bank. It shows a symbolic 100 PLN bill, made up of small green globules – a symbol taken from the bank's logo. This fun technique is especially straightforward with modo Replicators and Surface Generators. The illustration was used for outdoor campaigns.

Cut, bevel and thicken

Refine the shape of your pen nib

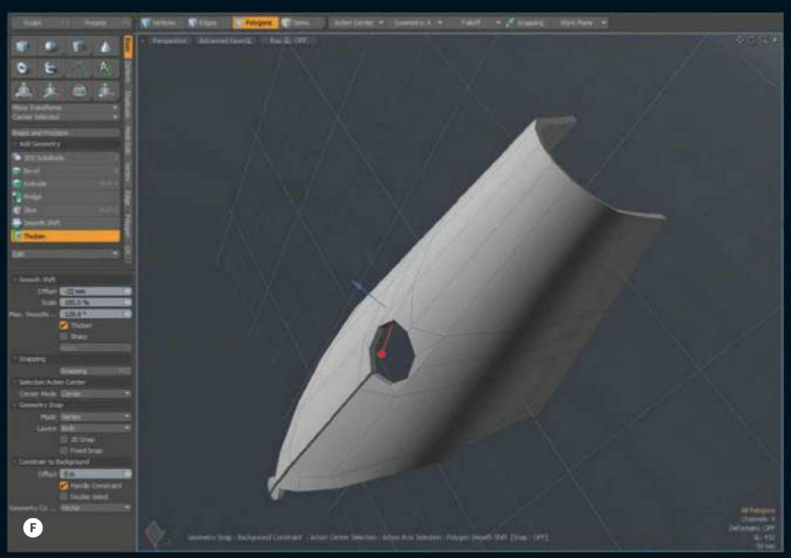


04 Cut a hole in the nib The three edge loops we created will be used to hold a circular shape of a hole in the nib. Create a new mesh layer and in Front view draw an octagon and place it between the new lines. Hit W for the Move tool, use Snapping for Background Geometry Constraint and move your shape back until it fits nicely to the nib. Cut it from its mesh and paste it to the nib layer. Delete the polys around our hole poly and Bridge the edges of the shape and the hole D.



Give your pen nib an edge by bevelling its spine

05 Bevel the spine edge Now select the edge running down from our hole all the way to the tip. Hit Edge Bevel (with a Round Level of 0) and give it a small bevel. Select the created polygon row, the hole poly and last hit Delete E.



06 Thicken your mesh While in Polygon mode hit the Thicken tool (in the Basic Tab). Thicken your mesh inwards by a value you think is best for a fountain pen nib F.

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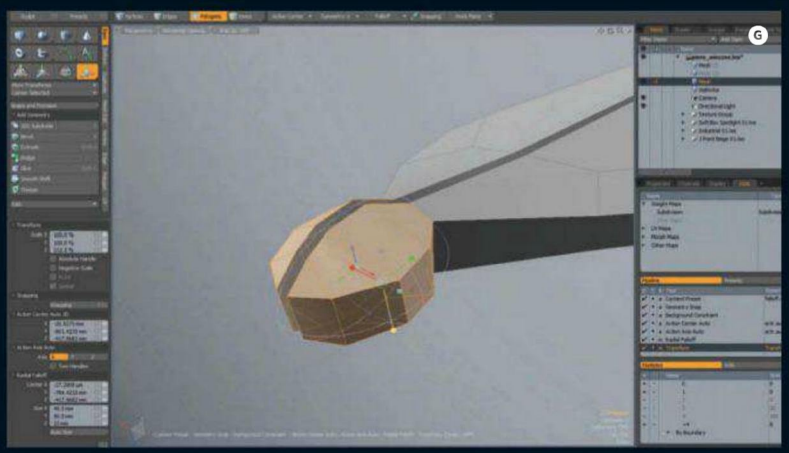
Tweak the model

Sharpen your edges and add detail

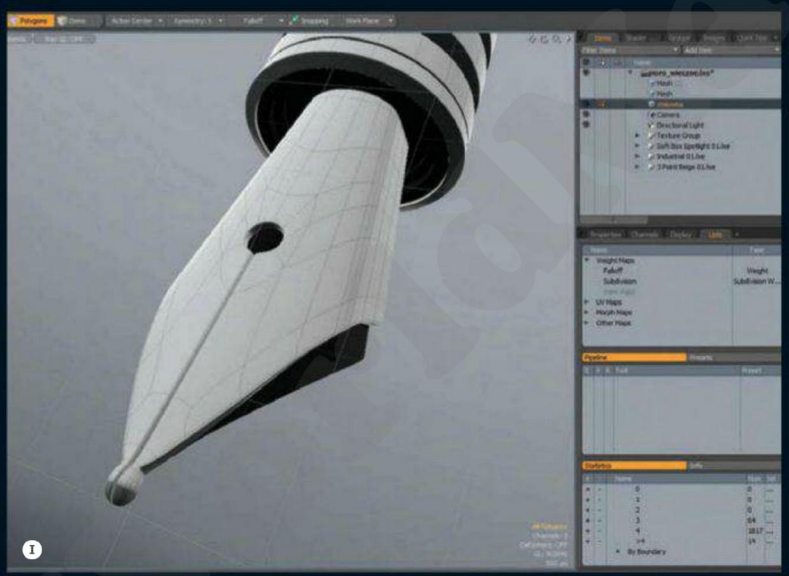
3 hours render time
Resolution: 3,200 x 2,400



07 Radial falloff to round the tip We should round off the pen's tip because now it has become flat. To do this there is no better way than the radial falloff. Play with it until you get the shape you desire. Don't worry if there's very little geometry to shape the tip with. When you hit Shift+Tab it all smoothens out. Also, set your mesh subdivision level to 3 or higher G.

Use the Loop Slice tool to sharpen your pen's edges

H



I

08 Use Loop Slice to sharpen edges Select the loop of polys running on the edge of the nib and add two extra loops (Alt/Opt+C) to sharpen the edges. Switch to PSub (Shift+Tab) to see the what effect is made H.

D Add extra details to your pen nib, such as the hole in the middle, with three edge loops

F Use reference images or a real-life pen to help determine the mesh thickness

G Here's a tip for the tip: use Radial fallout to round it. Experiment a little to get the end result you want

Think about topology

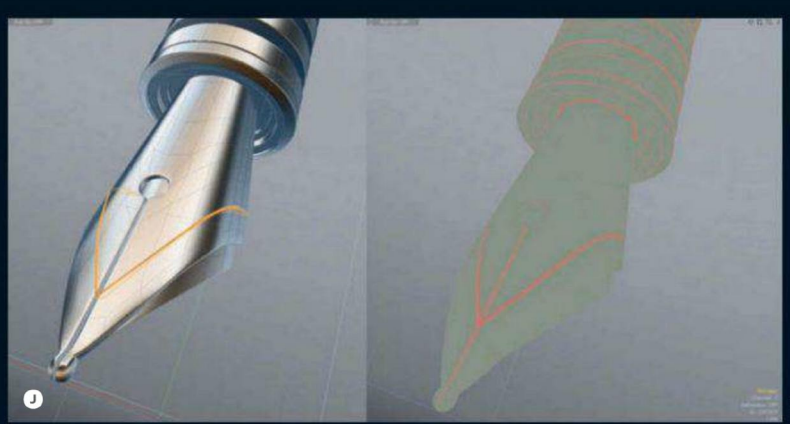
Think beforehand about your mesh in terms of the proper topology. You need to have enough polys in places like the centre of the nib, to properly hold the shaped hole. When it comes to drilling holes in surfaces in Subdivision mode, it comes down to this: draw a shape with the same number of edges as the hole that it's going to sit in. Only then will the Bridging work.

09 Model the remainder Create the other parts of the pen. To do the plastic part that sits inside the nib, just follow the first steps of modelling the nib itself. Just make it smaller so it fits inside. The upper part is basically a cylinder with a couple of indents I.

10 Sharpen edges with Edge Weighting Now using Loop Slice add an extra loop in the nib and then using the Edge Extrude tool drive it into the mesh (so there's a nice indent between the golden and silver part of the nib). While in PSub mode (Shift+Tab) use the Edge Weight tool for all the edges you want sharper. In Vertex Map view you can see the changes made while edge-weighting J.

I The upper part of the pen isn't in view but can be built with a 20-sided cylinder and three indents

J Adding an indent between the gold and silver sections with the Edge Extrude tool can provide a nice feature



J

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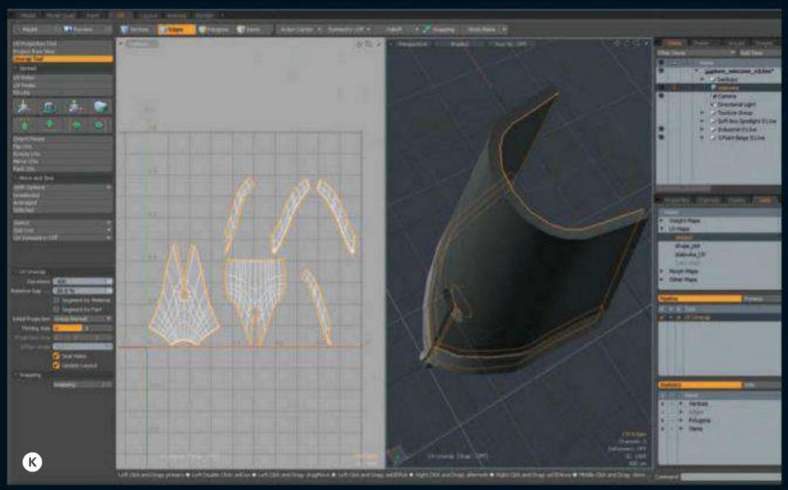
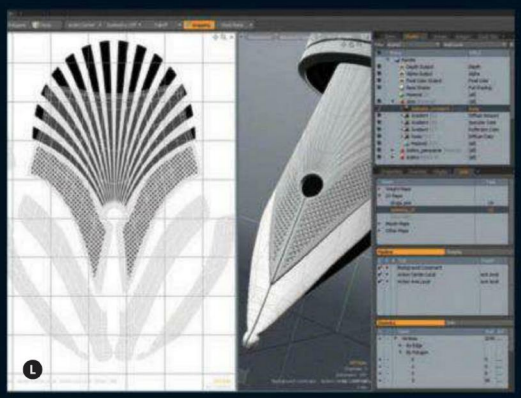
Final touches

Apply materials, lighting and rendering



11 UV creation: Unwrapping To texture our pen properly we need a nice UV map. Go to the UV tab and create a new, empty UV map for your mesh. Select an edge loop running along the side of the nib and also the edge we created for separating its gold and silver parts. Now use the Unwrap tool (set to Group Normal). This should result in a pretty clean UV map to work with K.



12 Add details with a custom bump map Select all the polys on your nib you want to be gold and create a new material (M) for them. Do the same with polys that will be silver. Now drag and drop the default Gold and Silver materials (from Assets) inside the gold and silver areas on your model. You can add your own black and white images to these materials and use them as bump maps. Be sure to use your UV, I used some default Illustrator patterns for my nib engravings L.

Experiment with different lighting techniques

Lighting is a major factor here. Often a modo artist may like to light their objects with luminous polygons. In this case lighting the object with only the Reflection Rays from the environment (with Global Illumination turned on) turned out best for me. So keep in mind there's more than one way to get the same effects; regular modo lights, luminous polys and Environment Lighting.

K It's time for texturing. Create a nice, clean UV map for your fountain pen nib

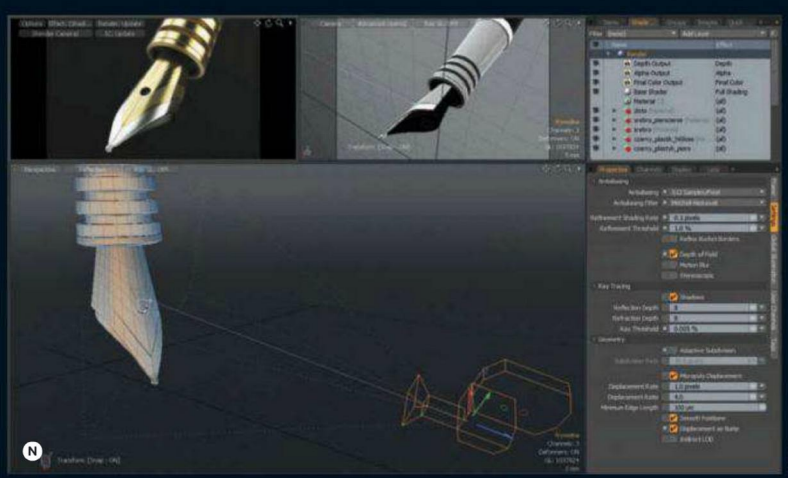
L For added realism, apply details such as engravings to your custom bump map. This particular design was created using Illustrator

M Your lighting setup and environment doesn't have to be overly complicated. A default 3 Point Beige 01 was used here

N Applying a depth of field effect to your final composition can really enhance your image

13 Environment lighting with Global Illumination If you're happy with your model and your materials, it's time to set the camera for your shot and light your pen. With this particular project it was super easy. After trying many different light setups I was most satisfied with a default 3 Point Beige 01 Environment from modo's Assets. I only used Reflection Rays with the GI turned on. I unchecked everything else from my environment. If you choose to you can add a secondary environment that is only Visible to Camera and set up a suitable colour gradient for your render background M.

14 Depth of field and render settings A very slight depth of field effect for your camera is a nice touch to the final render, but it involves some more tweaking of the Render Settings. What you'll definitely need to do is crank up the Anti-aliasing samples and the blurry reflection rays in the material settings for the Gold and Silver materials. Also lower the Refinement Shading Rate to 0.1-0.3px. Lower the Shading Rate to 0.1-0.5px for your Base Shader. This should help with the noise resultant from the Depth of Field camera setting N.



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Miki3 from Content Paradise. Circus props by Sixus 1 and Luke A. TerraDome by Runtime DNA.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Matheus Ribeiro Passos
3DArtistonline

Website http://matheus3d.wordpress.com
Country Brazil
Software used 3ds Max, V-Ray, Photoshop

Software used in this piece

3ds Max | V-Ray | Photoshop

Loft the Turn 2012 2011

The image was created for a challenge on the Ronen Bekerman forum, '2011 Summary'. I worked on this project during the passage of years [and] it was concluded by looking forward – and then not sleeping for the New Year [into] 2012. This would be my ideal place to spend New Year's Eve: many friends, good music, and fun – a cozy, fraternal place.

"I am a V-Ray user [and] I use the VRay Physical Camera. It works [just like] a real camera [which is] very useful. Use the functions of the camera to assist in lighting. The camera can give you a good balance of light"

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> It is very important to use the colour filter of the camera – I always used to leave my scenes more balanced in their original colour textures and materials

> For textures and materials I would advise researching and creating high-quality textures. A good way to get better detail is the use of dirt. Another point [to] consider is the values of the IOR; for a great material you should study the IOR [for] realistic physics

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Software used in this piece

modo ZBrush Photoshop

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info

Richard Yot

3DArtistonline

Personal portfolio site
www.itchy-animation.co.uk
Country UK
Software used
ZBrush, modo, Photoshop
Expertise Richard is an illustrator who specialises in quirky character design.

On the Disc

dragon tamer.mp4
karate kid-2.mp4

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Character animation in modo 601

Dragon Tamer 2011

Modelling
Textures

> modo 601 can now do full-blown character animation. We take a closer look at the new toolset
>
> **Richard Yot** illustrator

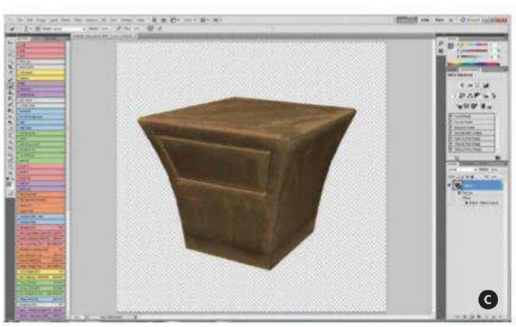
It seems 2012 will be a very exciting year for modo, which has reached a new milestone with the release of 601. Many new options are featured but character-animation tools are the most significant. Luxology has not contented itself with just copying features from established applications, but has approached the workflow from its own unique perspective with the aim of making the tools accessible and enabling users to get results very quickly.

Ease of use and quick workflows are at the heart of modo, and in 601 there are tools that enable novices or those working to short deadlines to set up characters for animation extremely quickly. It also enables more advanced users the ability to create powerful custom rigs with extremely complex and versatile controls.

For those who have ever spent frustrating hours setting up a basic character, modo 601 is breath of fresh air. Bones can be placed intelligently inside your mesh, saving hours of time tweaking them into place. Binding and weight painting is painless and you can use the new Pose tool and the Actors and Actions groups to start animating without any of the usual problems.

Create detailed assets

Use modo's new features to build textures and more



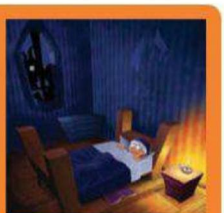
01 Initial modelling The initial modelling was completed in ZBrush using ZSpheres to block out the basic form of the character. I prefer to sculpt the initial stages of a character rather than deal with polygons so that I can concentrate on finding the forms without having to worry about topology. It's also much easier to revise and tweak a design in a sculpting package since the mesh is so much more malleable A.

02 Use new retopology tools In its latest version, modo has introduced some substantial new retopologising features. There is a dedicated Topology tab, a new Background Constraint type and some new tools, of which the Topology Pen is the most important and innovative. With this it is possible to retopologise extremely quickly by extending edges, creating new loops and merging vertices all without ever dropping this one tool. Having tried all of the specialised retopologising packages on the market, I can say that modo 601 is among the very best because of the fast workflow it offers and the way in which this one tool combines so many useful features B.

03 A new improved paint engine 601 has a much improved painting engine compared to earlier versions of modo, and I used this in conjunction with Photoshop CS5's 3D features to create all of the texture maps for the animation. By using the Brush settings to create chaotic and varied brushes, I was able to make the worn wood and paper textures that are used throughout the set. The Procedural brush in modo is particularly useful for this as it can create very natural results. The character was also painted this way, and the Image Ink brush was used to add details such as fingerprints on his virtual Plasticine face C.

Concept

The concept was based on an existing digital painting of mine. There was a nice atmosphere with a blend of spooky and funny that seemed like a good starting point for a simple short film.



A Finding the initial forms is much easier in ZBrush, where you can concentrate on design without worrying about topology

C Using modo and Photoshop's brush engines enabled me to create natural and convincing textures

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Set up the scene

Now that the assets are created we need to prepare them for animation

04 Add shading and materials Once the textures were painted, the different materials were defined in the Shader Tree. In order to create the handmade look that I like to use in my work I made heavy use of SSS in the character to simulate the look of Plasticine. The materials for the set were also designed to look handmade, so the floor used displacement to portray wood, the walls used a matte material to look like stained wallpaper and the blanket used bump and a tiny bit of fur to create a convincing fabric. I also sculpted some folds into the blanket, pillow and sheets D.

05 Light the set Because my intention was to mimic a physical stop-motion set I could make use of quite theatrical lighting, using a spotlight shining down on the character in bed. The little bedside lamp created some context for the light, but it was actually placed far above the character to single him out from his environment. Monte Carlo global illumination was used throughout the animation despite the added render times, because of the added realism it creates E.

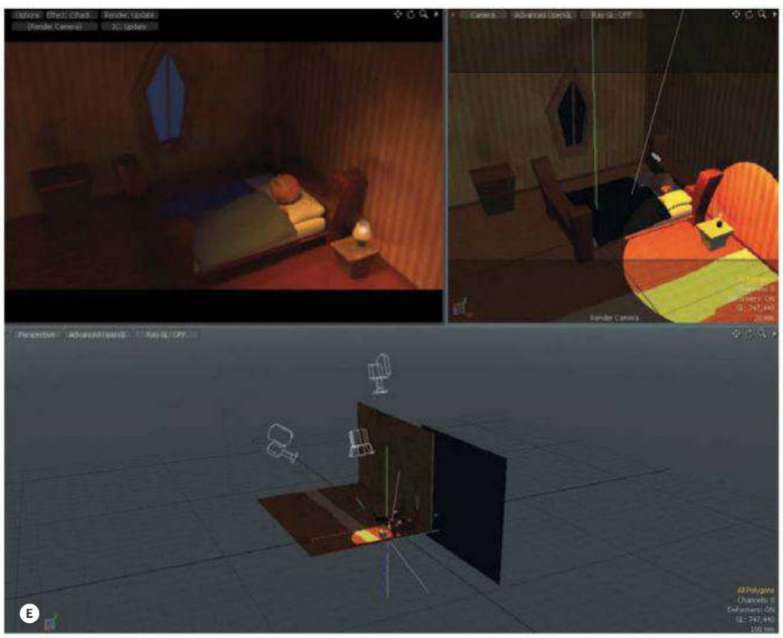
06 Lay out the bones With the assets all created, it was then time to move to the rigging stage. Luckily this is very straightforward in modo and can be done quickly. The tools are flexible and set up in such a way that it is still possible to make modelling changes without breaking the rig. To add bones to my character it was a simple case of drawing them over the mesh in the new dedicated Setup Mode modo takes care to intersect them with the geometry of the model, so once drawn they need little or no tweaking into position F.

07 Apply binding and weight painting With the introduction of bone-based deformers, modo has also introduced several automatic binding algorithms as well as allowing the paint tools to edit weight maps. Alternatively the weights can be edited with the same Weight tool that is used to crease SDS models. It is possible to create everything manually using Weight Containers, Deformers and the Schematic View, or to use an automated option and then edit the results manually. The automated results were very good in this case and only needed some minor adjustments to create nice deformations G.

Character design problems and solutions

There is a big difference between stills and animation when it comes to creating and preparing assets. When working on a still it is possible to cut a lot of corners – topology doesn't have to be perfect, meshes can be very dense, textures might not be seen close-up and so can be lower resolution. When making an animation, however, every stage of the process is going to take longer: a mesh that needs to deform must have good topology, an animated character must also have a manageable mesh density for fast playback in the viewport. Textures might need to be seen in close-up as well as from far away, so every asset needs much more thought and preparation for it to hold up under every possible situation you might require in the animation.

This means that as well as all the time spent animating and rigging, you generally need to allow for more time when it comes to asset creation. This means you get the best outcome that you are capable of. In this case I spent just as long on the assets as I did on the rigging and animating. Three weeks were spent building the set and characters and another three weeks on the actual production.



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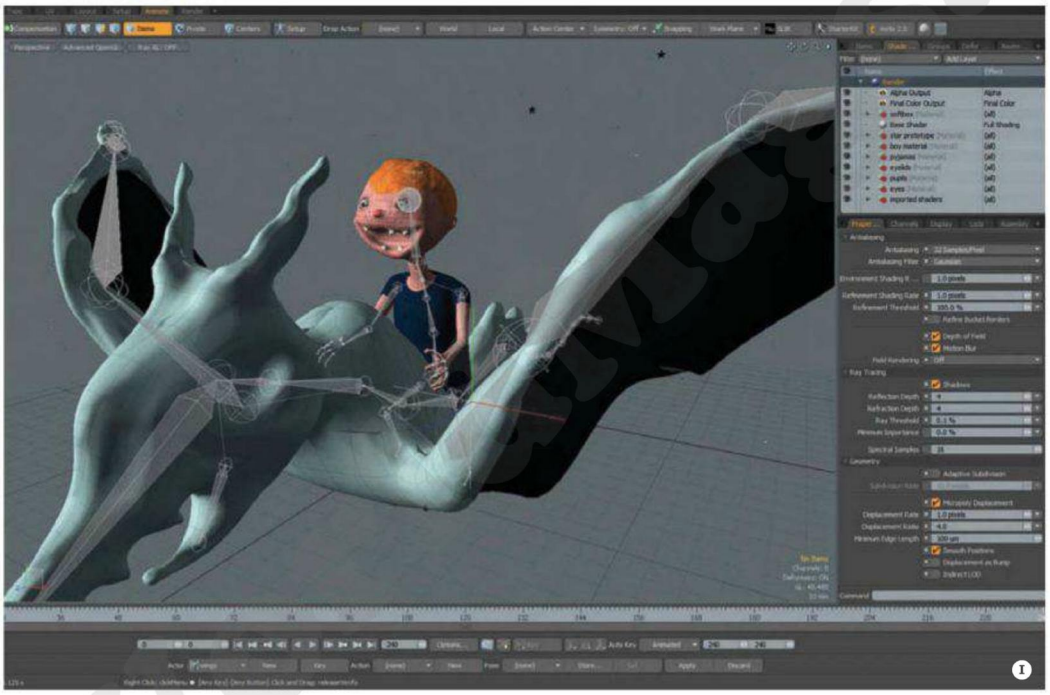
08 Utilise the new Pose tool The Pose tool is a really great feature for anyone who needs to animate a character quickly. It is essentially a very flexible and powerful tool for posing your skeleton without having to build any rigging controls. I was able to use simple kinematics to rotate joints in the normal way, and then by activating the Pose tool I could have on-the-fly Inverse Kinematics (IK) in any part of my skeleton. It's also possible to add real IK and use it in conjunction with the Pose tool, but it's not strictly necessary. This tool saved me many hours of rigging work, making this a relatively short-term project H.



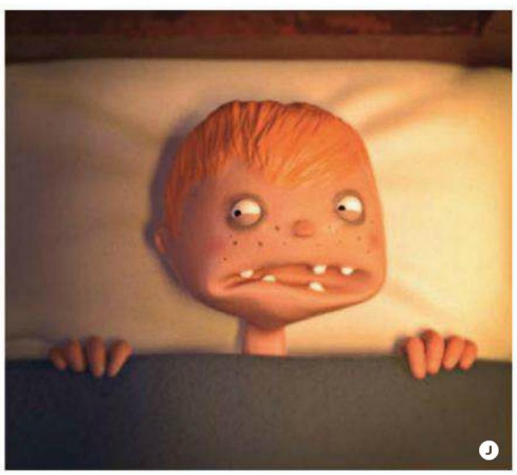
Create the set texture

I wanted the set to have a handmade feel and look like a stop-motion set. In order to do this I downloaded some photographic textures from www.cgtextures.com. I used both modo and Photoshop to handpaint extra layers of grime using custom brushes to simulate scratched paintwork and stains of various kinds. For the tinfoil moon and stars I sculpted some wrinkles and created a metallic material with some additional bump maps for extra creases.

The key to creating convincing textures is mostly patience, time and attention to detail. I spent more time on the textures for the set than I did on the modelling, because in this particular case the textures create the vast majority of the details. In order to further reinforce the stop-motion feel I used very shallow depth of field to make the results more photographic, and the fact that the focus is sometimes briefly off also helps to create the illusion of a real camera. The final touches in postproduction to add some glare around the highlights and a tiny bit of vignetting were also aimed at increasing the photographic feel achieved in the film.

09 Go to the Actors and Poses option Another nice workflow tool is the Actors and Poses feature, which enabled me to store poses and recall them later. I defined actors by selecting the rig for my main character and another one for the dragon, then I could set up the key poses for the action and reuse them in later sequences. This was particularly useful for repetitive actions such as the wings flapping. I was also able to set up smaller selection sets as Actors, which I did on the hands so that I could reuse hand poses throughout the animation I.

10 Morph map workflow Once the basic poses had been blocked out the next step was to create morph targets for both the facial expression and for corrective modelling on some of the deformed poses. With modo you can model and sculpt in pose space, making the task of creating corrective morphs very straightforward and in the Deformers List you can organise the order in which morphs and bone deformers are triggered. This way facial expressions can be fired before the skeleton poses, but corrective morphs afterwards. This gives animators a lot of flexibility with their use of morphs J.



D Using modo's excellent Render Preview makes material creation very quick

E The lighting was intended to mimic a stop-motion animation, with the character isolated by a spotlight positioned above him

F The smart bone positioning in modo ensures that your bones are always placed correctly inside your mesh

G Weights can be adjusted with modo's paint tools, or with the Weight tool

H With the Pose tool you can animate a character with minimal rigging or setup time

I With the Actors an Poses feature, you can define a motion to be used repeatedly

J Morphs can be used for facial animation and for corrective modelling on deformed meshes

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Artist Showcase

Richard Yot

I am an illustrator that specialises in making quirky characters and quirky little worlds for them to live in. I like giving my CG work some of the charm of handmade things and use photorealism with a twist to create something a little imperfect.

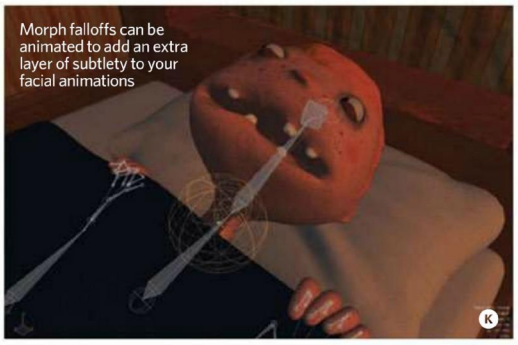
***Rufus* modo (2011)**
This bad tempered little mutt is part of a family of not-really wooden characters. He's noisy and irritating, like any self-respecting small dog should be.

Vinyl monster
ZBrush, modo (2012)
If he had some brains, he would be scary. Part of a series of virtual vinyl monsters created for 3D Artist in a previous issue.

***Vlad* modo, ZBrush (2011)**
A virtual pâpier maché monster with a big mouth and even bigger tongue. He's not as scary as he thinks, and being pink doesn't help.

Character control

Fine-tune the rough animation

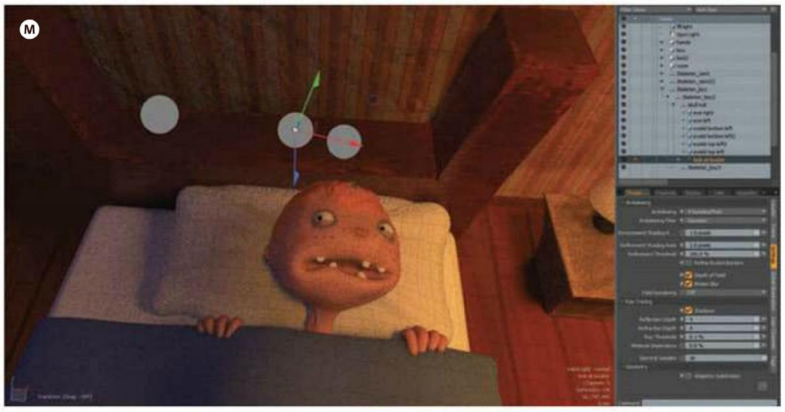

Morph falloffs can be animated to add an extra layer of subtlety to your facial animations

Think pace and contrast

One way of helping a story along is with pacing and contrasts. The start of the animation is deliberately slow to reinforce the idea that the character is sleepy, the final section is paced much faster as a deliberate contrast, the difference between the two helps to tell the story. The editing was also instrumental in this, with slow dissolves used in the first part and fast cuts in the second to emphasise the change in mood.

Ⓛ Workflow in modo frees you up to spend more time on content rather than technical aspects

Ⓜ A simple rig for controlling eye movement, that can also be overridden when necessary



11 Morph falloffs Most deformers can be attenuated with falloffs and this applies to morphs too, adding another layer of control and subtlety. I was able to model quite extreme versions of my character's expressions and then use Spherical Falloffs to modulate how and when they appeared over his face. This enables for much subtler morph map animation and also for more movement. For example I animated the gulp by creating a simple morph map of the throat but created the movement by animating the falloff which made the throat move as it flowed over the morph map Ⓚ.

12 Aim for emotion With most of the technical work done and the basic poses and expressions blocked in, the most important part of the work could then proceed: the performance. Animation is essentially about conveying emotions and maybe humour and it's important not to lose sight of this. Because modo enables such a rapid workflow with the Pose tool and the minimal rigging, I was able to spend more time working with the character and his emotions rather than spending time on technical tasks such as building rigs or setting up IK Ⓛ.

13 Animate the eyes With this particular character design (although this is true of almost any character), most of the expression had to be conveyed in the eyes. The big mouth lends the design a lot of humour and quirkiness, but is limiting in terms of animation since it doesn't have the realism of a less-extreme design. This meant I had to take great care animating the eyes and I used the lower lids extensively to convey the character's emotions. I made a basic rig using locators and direction constraints and another really simple rig to control the eyelids Ⓜ.

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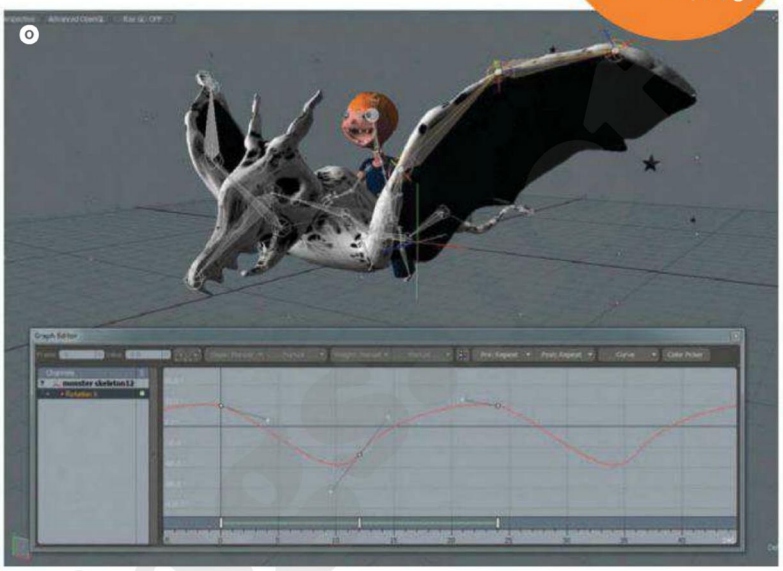
Final animation and edit

Once the final touches are complete, it's time to edit the film

5 days render time
Resolution: 1,920 x 1,080



14 Place cold sweat In the sequence where the boy wakes up suddenly I needed to create many little beads of sweat forming over his face. These were done with a replicator system that used the face as a point source and a map was painted to control their placement. Then it was simply a case of animating their size over time to create the illusion of the character breaking into a cold sweat N.

15 Use the Graph Editor The final step in the animation process was to tweak the Curves and the timing by manipulating the Curves in the Graph Editor. The Graph Editor in modo also has some useful controls for setting up repeating actions such as the dragon's wings in flight. I could animate them once and set the action to repeat O.

16 Render the animation Because the raw animation was almost two minutes long at full HD it was rendered on a commercial render farm, taking a few days to render out all the sequences. In order to keep things manageable, I broke the animation up into short sequences that could be rendered separately. Each sequence was rendered with extra footage at the start and end so I could have some space to work when making my final edit P.

17 Final composition and edit Finally everything was put together in After Effects. Magic Bullet Photolooks was used to add some bloom and vignetting. All of the depth of field effects were created in the raw modo renders rather than post as this gives much more realistic results. Audio was added at the edit stage and all the final decisions on timing and pacing were left until the very end. I began the editing stage with some rough viewport renders while the animation was in the render farm to save time Q.

Ideas and story

The story ideas were being revised all through the process and I didn't settle on an ending until the animation was almost complete. I had initially started with a darker direction that was potentially funnier, but it wasn't right for this project so I toned it down. But then I wasn't really happy with the ending so I kept storyboarding different ideas right up to the eleventh hour when I settled on the final version. This is a normal process with any animation, because if there's even a small chance of improving the work before it's too late then that chance is worth taking.

N The beads of sweat were created with a replicator that was animated to increase gradually over time

O The Graph Editor can be used to quickly set up repeating actions as well as for tweaking timings

P The new, improved render window in 601 is much more user-friendly than seen in previous versions

Q All of the final editing, compositing and effects work was done in After Effects

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I made this...

Incredible 3D artists take us behind their artwork

Artist info

Carles Gonzalez
3DArtistonline

Website www.cgselworks.com
Country Spain
Software used 3ds Max, mental ray, ZBrush, Photoshop

"I created colour control maps for the Unscattered Color, Epidermal, Subdermal, SSS, Reflection and Specular Slots to manipulate the parameters and achieve a wet and reflective effect"

"The skin is mental ray Fast Skin + Shader. With this advanced fast skin material you can take more control over the reflection and specular parameters too"

"One of the main difficulties I had was with the design itself. I started out with the DynaMesh feature in ZBrush; however, when you are building something from scratch it's hard to stop refining it – you're always trying to improve it with new ideas"

Welcome to Atlantis 2012

I've wanted to make a creature to improve my lighting and shader skills for a long time. This character came to me while I was thinking about the unknown and the poor knowledge we have about the abyss. I thought it would be a great idea to imagine an old civilisation lost in the deep sea.

Software used in this piece

3ds Max | mental ray | ZBrush | Photoshop

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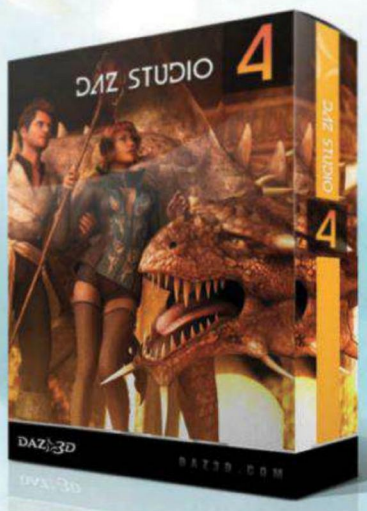

DAZ 3D

WWW.DAZ3D.COM/STUDIO

Create a desert landscape

Mars Desert 2012

Software used in this piece

LightWave ZBrush Photoshop

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info

Eugenio Garcia Villarreal

3DArtist online

Username: artecnl

Personal portfolio site
www.flickr.com/artecnl

Country Mexico

Software used
LightWave, ZBrush, Photoshop

Expertise Eugenio is a texture and environment artist with experience working in the advertising industry. He is a co-founder of D10 Studio.

> Blend 3D and matte painting techniques to produce a landscape reminiscent of the Red Planet

Eugenio Garcia Villarreal is a graphic designer and 3D Director at digital media agency D10 Studio

This image was inspired by the landscapes of Mars and deserts on Earth. The mix of different arid environments enabled me to expand on the tonal range and structures in the scene. I added an element of natural greenery to provide a contrasting colour and shape – it represents the moment a plant found its way to the surface in a deadly environment.

Over the next few pages I will share my workflow and techniques for producing the final image using a mixture of 2D and 3D techniques. This approach meant I could produce a commercial-quality image while working to a tight deadline.

My toolset included LightWave for the basic geometry, ZBrush to get a base mesh for the final rocks in the image and then Photoshop for the final integration of the base image and textures. I also included some matte painting techniques to add to the overall effect.

Concept

Films and comics such as *John Carter of Mars* and Roger Dean landscapes, plus Earth-based deserts and the Red Planet itself, inspired this scene.

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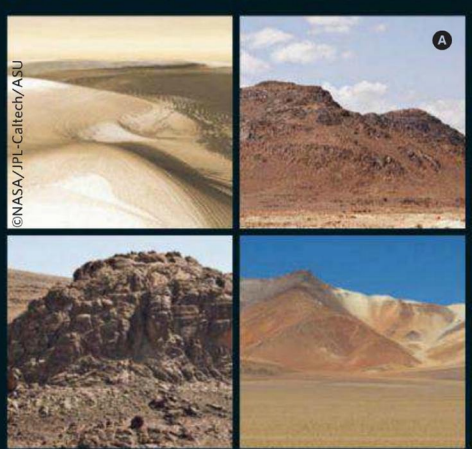
01 Research Before you embark on a project such as this, it's always worth searching for different desert types, moods and light. Search engines such as Google and stock photography sites are useful. The different colours and shapes help to provide inspiration for the initial sketch.

Another recommendation I'd make is not to limit your research to one particular source or site – other mediums such as television documentaries, games and movies can also help inspire your projects. NASA has a great stock library of reference images you can browse through (**www.nasa.gov**). Even photographs of famous places such as the Grand Canyon can be a great help A.



02 Sketch out a concept It's important to digest all your reference material before you tackle the first sketch. Use this stage to try to find a good composition – I prefer to put my main feature to the right, rather than the left or the centre of the workspace, but experiment and see what suits you.

Throughout this point in the process you should test out colours, block shapes, add and delete stuff to get a composition you like B.

A The main references for the image combining elements from Earth and Mars

B The initial sketch. Notice the final image has slightly different details

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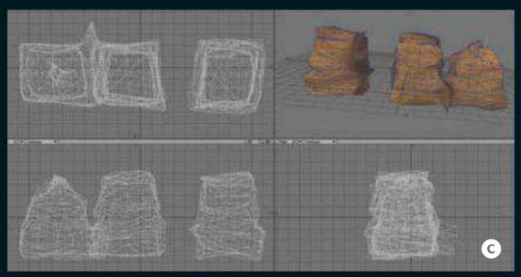
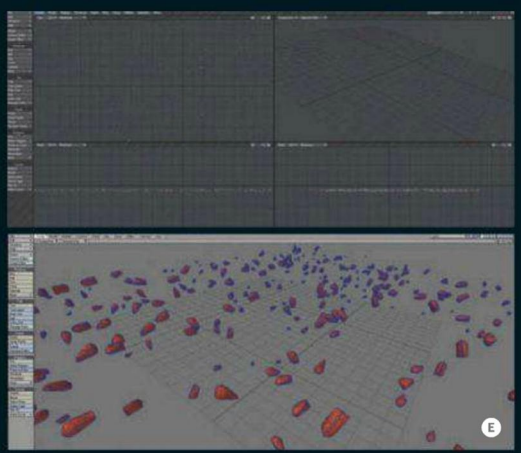
Build your environment

Start shaping the elements to occupy your scene



03 Use 3D blocking I used simple shapes to reproduce the composition I created in the sketch. I used an 18mm camera in the LightWave layout and built simple shapes of the main canyon as this is the most prominent of the models. Everything was completed with box modelling, later subdivided in faces. Here the lighting is a simple distant orange light at 150% C.

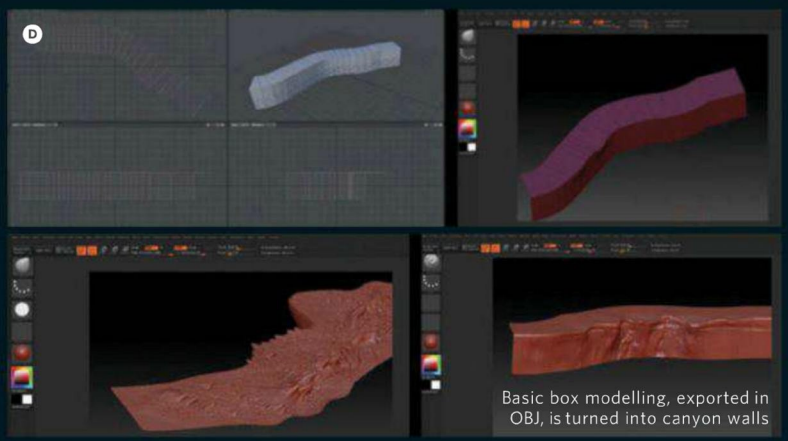


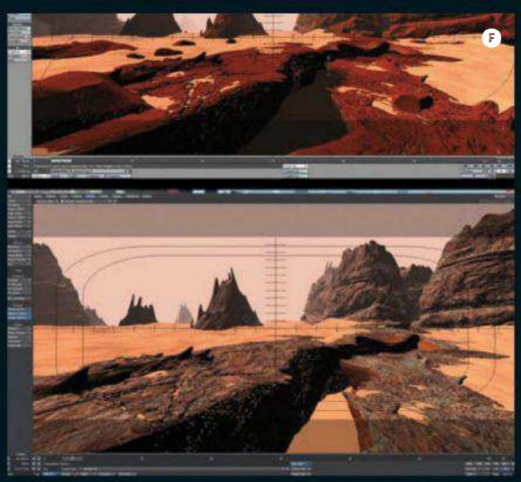
05 Add stones and particles A good way to achieve little pieces of debris or stones is to use the Spray Point tool in the modeller. The next step is to have a good amount of points, later change the scale in Y axis to have all points in the floor. Use the Box Modelling tool and do a subdivision (metaform). Later on you can use the Noise or Jitter tool to get a random stone.

Next go to Point Clone Plus in the Multiply tab. Here you can clone the stone based on the Points Cloud you made. Tweak the values of Scale and Rotation to get random stones E.

04 Move to ZBrush sculpting As I mentioned, I made the basic shapes in the LightWave modeller. I then exported the OBJ files and imported every piece into ZBrush. While I'm not an expert user of ZBrush, I understand the basic sculpt tools which is all you need for this piece. Import some jagged rock alphas to achieve nice detail in the objects. First subdivide them all, then use the Move tool, Drag and Rock brushes to create the canyon walls, mountain and rocks.

To save time I only created five different objects then cloned some of them throughout in the layout. This is a very practical approach since I knew I was planning to do a matte painting on the 3D base D.





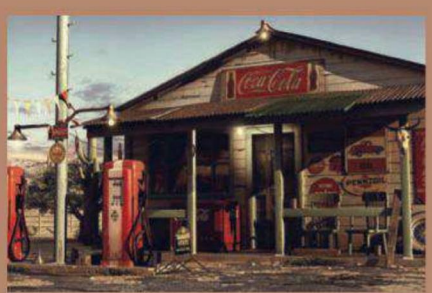
06 Arrange your layout object Since this is a matte painting base, we only need the high-resolution objects with simple red rock texture. Export everything from ZBrush to OBJ, with level 5 of subdivision.

Only replace the proxy objects with the ZBrush exported objects, already saved as an LWO. By previewing the render with FPrime (a great plug-in to work in real-time rendering) arrange objects, change shapes and rotate objects to get a nice composition. Meanwhile, the water is created with a simple plane and a water shader F.

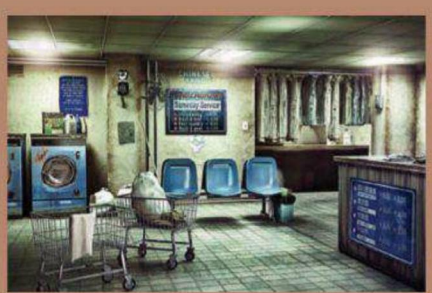
Artist Showcase

Eugenio Garcia Villarreal

I'm a 29-year-old graphic designer, with nine years of experience in digital art. Reading tutorials in magazines and online helped to hone my 3D skills. I later applied this knowledge by creating environments for web campaigns, providing me with invaluable experience. I then co-founded D10 Studio – a motion graphics and web design studio.



Desert Gas Station LightWave 3D 10 (2011)
Classic B Movies, old gas stations and the work of Mauro Scardini inspired this image. I wanted the final result to be a complex environment.



Laundry Room LightWave 3D (2009)
This is an old image made for a client. It was used on an animation for a web-experience site; the goal was to create a Seventies-style laundrette.

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Use photo sources to add realism

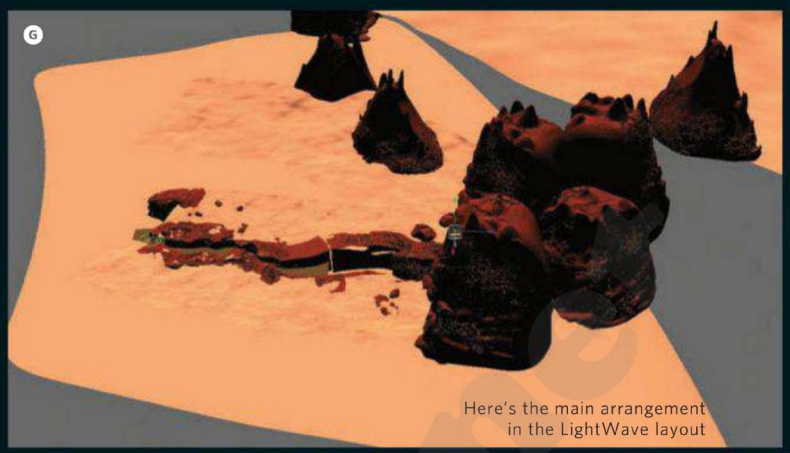
It's always best to gather as much reference as you can. If you are creating a canyon then it's important to check out lots of high-resolution images to get an idea of the details that make up the environment. Everything from dust, fog, plants, colour and shape of the rocks, different colours according to the daylight and colour of the shadows can make the difference between a realistic and an unrealistic scene. Once you have the background knowledge, use it to put your own spin on the landscape's features.

Don't forget you can also experiment with different textures and shapes. At this point in the process you can crop the base 3D mountain to have a better composition. Always mirror your image to get another point of view and you will notice some faulty details that you didn't before.

Another approach is to ask for feedback from your colleagues or friends. Their opinions will bring a fresh perspective on your work – highlighting things you may not have considered before. If you become tired from working on one particular area take a break, go for a walk and get away from the screen. It will ensure your mind is refreshed, enabling the creativity to flow a little better.

07 Final light and render To achieve the lighting you want, use a distant light tinted to orange at 150%, enabling you to get a nice exposure. The render was done in FPrime with Monte Carlo Radiosity at 100%. Use the Backdrop gradient to get a suitable atmosphere of colours bouncing on all the geometry.

For this project doing a large-scale render (10,000 x 3,500px) enables you to add little details in the matte painting stage. It also means you can crop parts of the image if you need to redo the composition for any reason G.



Here's the main arrangement in the LightWave layout

08 Hunt for textures Once you have the final render, the next task is to get nice textures to use in the final matte painting. These are easily obtained from CGTextures (www.cgtextures.com). Since we're creating a Mars-inspired desert landscape we'll need mostly red, jagged rocks. Some are used in modes and others are colour-corrected to match the render colours. Use masks and grunge brushes to give natural-looking edges. While on the site, look for good sand, water, caustics and sky textures H.

C Simple shapes according to the sketch are good proxy objects

E Transforming random points in different stones saves a lot of time

G This is the basic light setup: a distant orange light at 150%

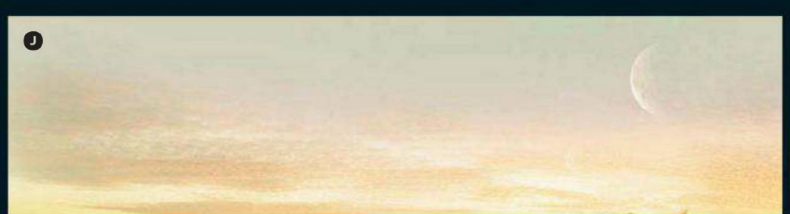
H The main textures used in this image

J The final sky, altered to suit the landscape

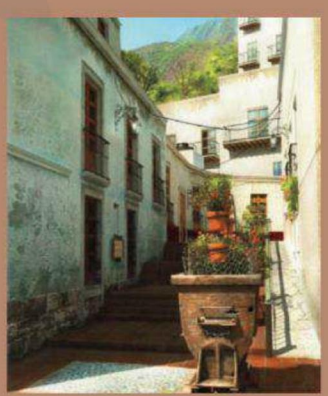
The initial 3D base rearrangement

09 Start to polish the base 3D Now is the time to fix the details you're not entirely happy with, such as the sand shapes. Tweak this with a simple brush where the sand is dispersed. You will later replace it with a real sand texture, the brush is simply used as a guide for the final texture.

For the rocks I used a jagged rock texture that was colour-corrected to match the image. I then applied red dirt textures to create the dust and make a more realistic foreground I.



10 Look to the sky The original sky was made using base colours of the render, but I decided to change it to a greenish colour later on. It is composed of real photography of an afternoon sky in Overlay mode to have a nice fusion. The moon is a simple texture with Screen mode, masked to show only one side – it was later cloned to have the two-moon effect J.



Guanajuato Alley **LightWave 3D (2007)**
Guanajuato Alley is one of my first images combining 3D and 2D techniques. Inspired by the old colonial city in Mexico, it was created with box-modelling techniques and simple UV mapping.

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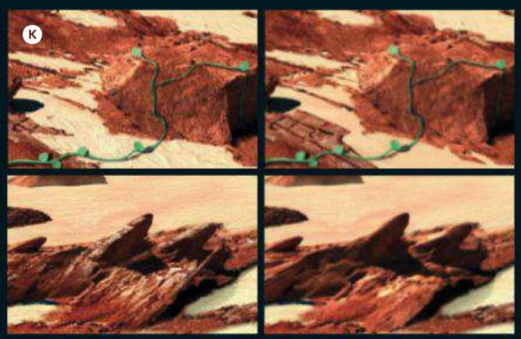
Final retouch and render

Add life to the scene with plants and water

3 hours render time Resolution: 10,000 x 3,452

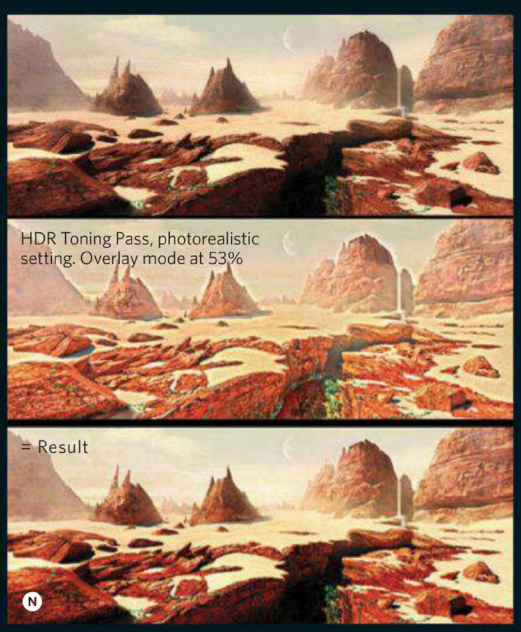


11 Detail sand and rocks A plain dunes texture was used for the sand. Some of the dunes were from the base 3D image applied by a procedural texture, the mask technique was used for the close-ups. Overlay textures of rocks were used for the boulders and mountains. A jagged texture in Multiply mode helped to add a little more detail according to the scale and distance K.

Overall thoughts

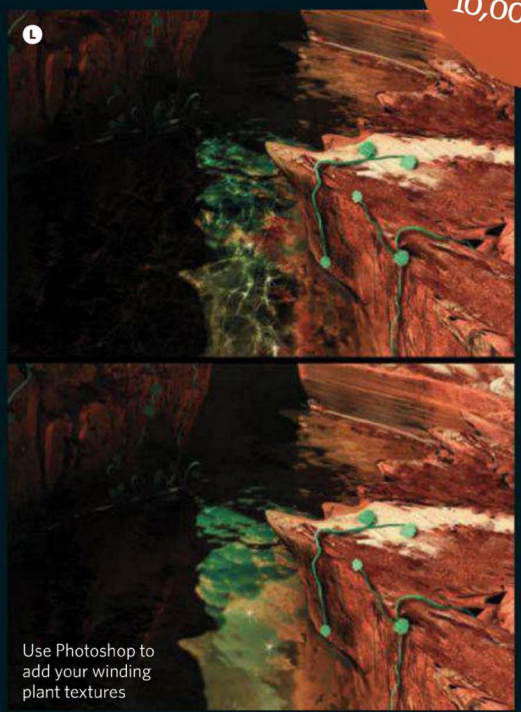
Once your image is finished, a good way to get feedback is to use forums and 3D gallery sites. Try not to take criticism personally – instead use it to let you grow as an artist. Remember to do what you enjoy too.

K Comparison of the base 3D model and the mix of textures and this base



N You can get nice details using photofilters and the HDR Toning pass

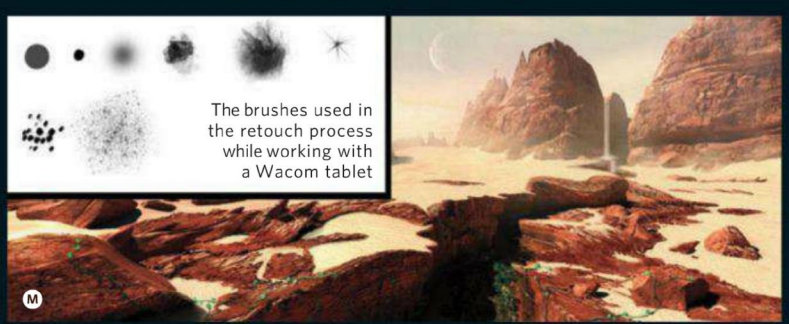
14 Make more corrections Play with the reds and yellows to get a more saturation on the objects in the foreground and less on the effect on the background. Use the Color Burn tool to add highlights to the edges of the rocks and mountains. For contrast you might like to do a HDR Toning pass. With a mask bring some of the rock highlights to the surface N.



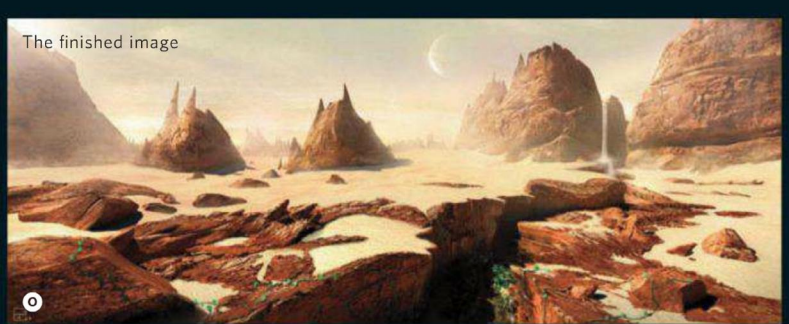
12 Insert water and plants Now it's time to apply the images collected in the texture stage, with Photoshop modes. Add a caustic image in Overlay mode and add little details in the rock borders to see the water level.

A Soft Round brush was used for the waterfall and the cloud of water rising from its base. For the plants create a creeping vine shape with a similar, basic brush. Once you are totally happy, add a shadow to fix the position. For the plants' leaves use a texture modified in shape, cloned with rotation and light changes according to its place in relation to the sun.

To finish, add a layer under the plant layer and make the contact shadow according to the sun's position with a Soft Round brush L.



13 Begin to retouch Now we can work on ambient details, such as fog, to add depth, detail and emphasise the scale effects. Adding some clouds in the ground helps make some sand storms. To achieve this effect simply add some volumetric light on the top-left side, use the Selection tool with a white colour combined with the Overlay mode and Gaussian Blur M.



15 Finish image details Once you're happy with the final result, flatten the PSD. Mirror the image again and add more highlights with the Burn tool. Use the Sharpen tool on some foreground rocks to get a nice crisp effect. Now your Mars desert should be complete O.

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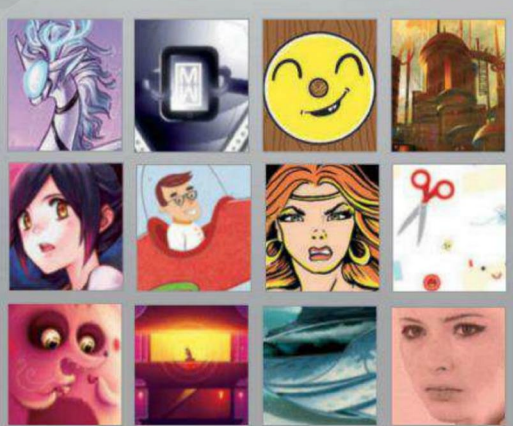

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3DArtist

Masterclass

This issue 3D artist Ross Board explains how to capture motion sequences with a piece of affordable hardware: the Microsoft Kinect

Motion-capture technology is now available to more users than ever before

Motion capture with Kinect and 3DS Max

"Creating custom motion-capture sequences has never been easier with the aid of Microsoft's Xbox Kinect. Here you'll learn how it's done"

Motion capture was once associated solely with expensive, inaccessible systems that could only be operated by seasoned industry professionals. With the introduction of Microsoft's Kinect camera for Xbox, this is now no longer the case. Costing little over £100, it offers truly functional mocap for the masses.

This tutorial will discuss the basic techniques required in order to achieve a high-quality motion capture solve using Microsoft's Kinect and iPi Desktop Motion Capture. There are undoubtedly many different ways to achieve the end result, using various software configurations and methods. However, we have found that iPi Soft's package delivers quite simply the best possible result with minimum confusion and difficulty along the way. There is a 30-day free trial available on the iPi Soft website: www.ipisoft.com.

There are only a few considerations that need to be taken into account before beginning. First you must have a relatively clear, open space that allows for the Kinect camera to see a good proportion of the floor and the entire body when stood in a T pose with arms outstretched. A large tripod makes a good stand for the Kinect, although anything that can achieve a level at approximately chest height will likely be fit for purpose. Beams of direct light cast across the shot can also cause problems in the process, diffuse light will provide far more reliable results.

Throughout this tutorial we will touch upon some relatively complex functions of 3ds Max in a very brief manner. It is recommended that readers have a basic grasp of the principles behind the biped rig and its associated interface and functions before beginning. It is also necessary to reassign the biped-naming conventions to support the iPi output by using a custom marker name file, which we have supplied for you (www.truebones.com/mnm.zip).

Potential uses of this process are limited only by creativity, bringing what was once only available to those with vast systems to the 3D artist at home. It can be used in anything from animated storytelling and short films, to detailed architectural fly-throughs. This tutorial sticks with realism, demonstrating the process using some of aXYZ design's highly detailed pre-rigged 3D character models, two of which are available to try for free from its website: www.axyz-design.com. Motion capture with the Kinect is still subject to the same basic principles as professional motion capture and it's important to be aware of what looks good in terms of the actor's performance. What seems convincing in reality may not be when digitised, such as the swaying of the hands and body while talking. It's also vital to remember than while exciting, motion capture should be exactly that, with the technology always informing the story.

Retarget the bone structure of your characters

If you're using a custom character rig, it's likely that the bone configuration and naming conventions will differ to those assigned in iPi Soft's motion-capture process, causing all manner of problems. This can be solved in a number of ways, such as exporting the character rig from 3ds Max as an FBX file and importing it back into iPi. Later you can select each bone in the custom rig and associating it with a bone in the iPi default rig. This can be done in the Export tab and enables a custom motion transfer profile to be created. We have supplied a link to a MNM file that should be suitable.

A Set up your Kinect camera carefully. We suggest using a tripod to ensure the capture remains level at chest height

C Bring your performance to iPi Desktop Motion Capture and begin to edit within the Point Cloud

D You can alter your digital actor in accordance with the physical proportions from your recording

F Use biped controls within 3ds Max. Ensuring naming conventions are kept to is tricky, but essential at this stage

G Record motion to your digital character within a new 3ds Max scene, using the rigged aXYZ design model

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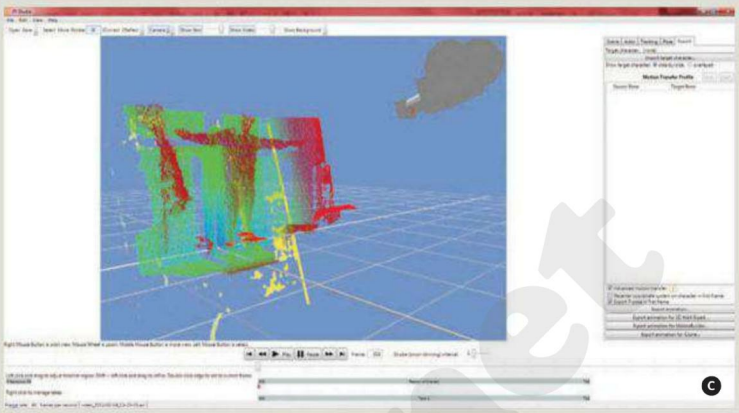
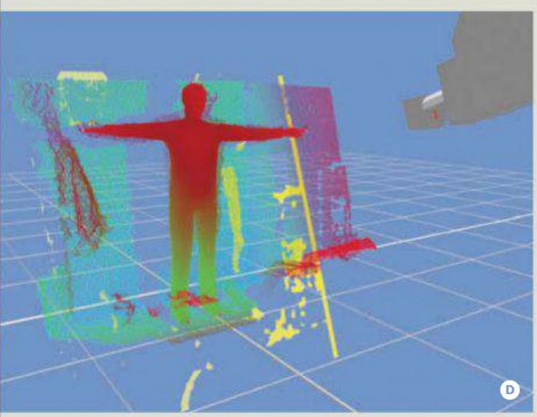
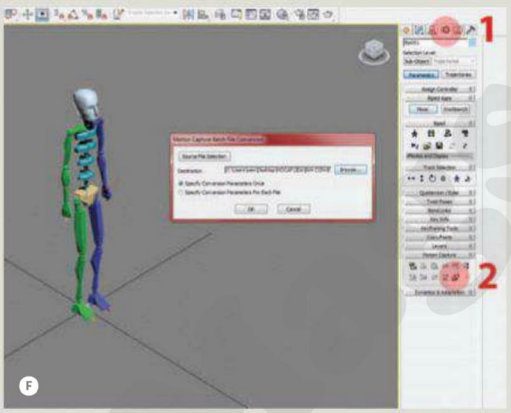
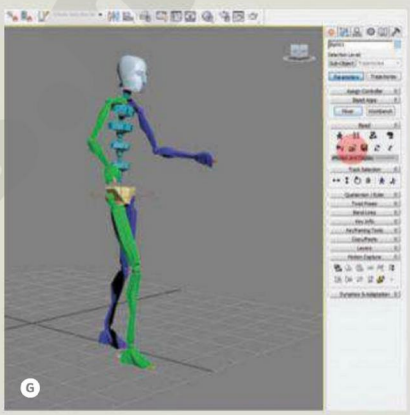
Hold a T pose with your palms facing the camera in order to ensure you have the correct alignment









Models courtesy of: aXYZ design - www.axyz-design.com

Get moving

01 Set up your hardware and software

Position the Kinect camera facing the best possible capture space at approximately chest height, a blank wall with an unrestricted view of the surrounding floor space is ideal. Download and install the iPi Desktop Motion Capture software alongside iPi Recorder software (30-day free trial and completely free respectively) from: www.ipisoft.com/downloads_index.php. Kinect drivers are bundled in this package. The free iPi Recorder will be used to capture the initial motion and the desktop suite will be used to process and interpret footage A.

02 Record your motion

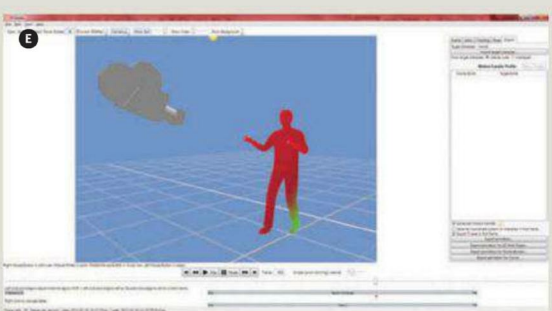
Open iPi Recorder and select the Xbox Kinect camera as a source, this will then generate a preview. Use this to ensure the camera is aligned properly and there is sufficient space in the frame. Select Start Video Recording and ensure that the frame is completely free from movement for one or two seconds, the actor can then walk into the shot and form the classic T pose, arms outstretched and palms facing the camera. Hold this pose for one or two seconds and when satisfied press Stop B.

03 Move to Desktop Motion Capture

Once satisfied with the performance, open the video in iPi Desktop Motion Capture that will analyse the footage and interpret the one or two seconds of background material. Verify the camera position by rotating around the Point Cloud. Any errors encountered at this stage are likely to be a result of not enough floor space to interpret a ground plane or obscure conditions. Position the clip sliders so as to start the scene towards the end of the initial T pose and then trim the end of the performance C.

04 Align the digital actor

Set the Actor Height in the Actor tab and use the Select and Move tools to best position the digital character in accordance with the physical actor's proportions and position in the Point Cloud. Go to Tracking>Refit Pose and the software will automatically refine this positioning as best possible. Press Simulate, wait for the analysis to complete and you'll have a working track. Apply Jitter Removal and export to 3ds Max Biped format BVH D E.



The iPi Desktop Motion Capture software will automatically refine your character to the optimal proportions

05 Import and Convert your BVH file

Open 3ds Max and create a basic biped from the Systems section of the Create tab, proportions at this stage do not matter. Select the pelvis, click the Motion tab and a series of biped specific controls will appear. Navigate to Motion Capture in these newly visible options and select the Load Marker Name button and use the MarkerNames.mnm* file supplied, this will ensure naming conventions are adhered to. Now select the Batch Convert option (two bent arrows icon). Convert the previously generated .BVH file from iPi Desktop Motion Capture. This will generate a BIP file, which is far less problematic in 3ds Max F.

06 Assign motion to your digital character

Open a new 3ds Max scene and create a new biped rig, select as before and click the Open File button in the Biped section of the Motion menu. Navigate to the converted .BIP file and select Open. All being well, the recorded motion should now be assigned to the digital actor, so scrub the timeline to check for problems. Finally open the aXYZ rigged model and repeat the process. If everything has been followed, you should be greeted with a perfectly animated motion-capture display G.

3DArtist Questions & answers

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including LightWave, 3ds Max and ZBrush

Need help fast? Join the

The advisors

LightWave

Craig A Clark
www.behance.net/caclark

Based in the UK, Craig has ten years of experience in the movie, television and games industries. He specialises in hard-surface modelling

ZBrush

Andrzej Kuziola
www.kuziola.com

Self-taught artist Andrzej Kuziola originally qualified in dentistry before discovering his passion for freelance illustration and 3D art

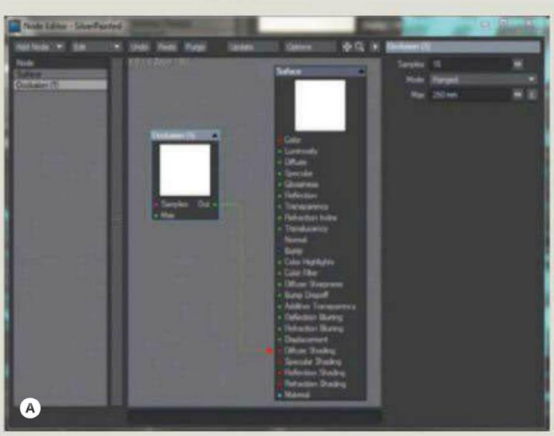
LightWave

Ambient occlusion rendering in LightWave

How can I make realistic clay models in LightWave?

We've all seen them: those renders where someone's totally cool model looks even more cool because it looks like it was made from clay. But how do you create them? Before we get on to the how, let's expand on the why. The primary purpose of the ambient occlusion render is to highlight the details on a model. As the name suggests, it simulates where light hitting the model is blocked or occluded. In its own right it's a great way to showcase the geometry of the model. Often, when lit in its intended context, you might not always get an appreciation of what is there. But its use doesn't end there. You can render your model in its scene with all your final lighting, shading and texturing applied. You can then take your ambient occlusion render and composite it on top. This will give your render a little extra depth and refinement, getting more pleasing darkening in cracks and crevices. As with many effects, there are multiple ways you can achieve similar results. In this case, we will look at one of the main approaches.

The simplest, and probably longest way in terms of render time, is to set your scene backdrop to white, make your model flat, diffuse white and render the scene with Background Radiosity. That works well for objects where the viewer



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growing community at www.3dartistonline.com

3ds Max
Paul Hatton
www.cadesignservices.co.uk

A 3D artist, modeller, animator and graphic designer, Paul currently works for leading design services company C A Design in the east of England

Traditional
Jaclyn Havlak
www.theartdepartment.org

Jaclyn is the executive producer and creative director at The Art Department. She walks us through TAD teacher Mark English's life-drawing techniques

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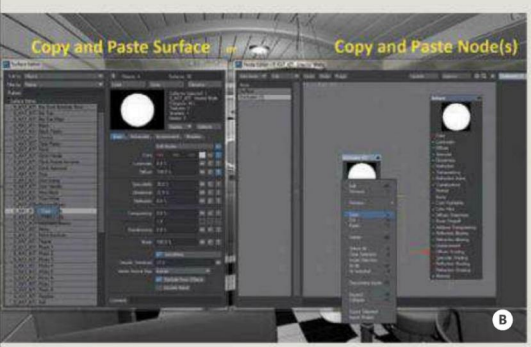
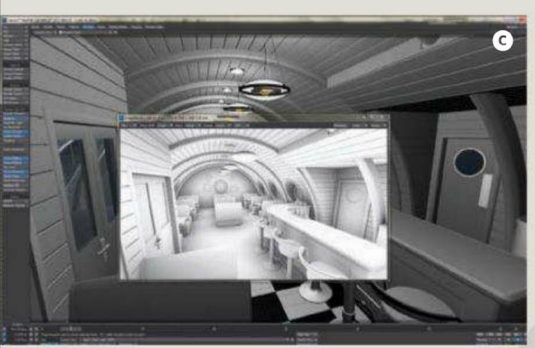


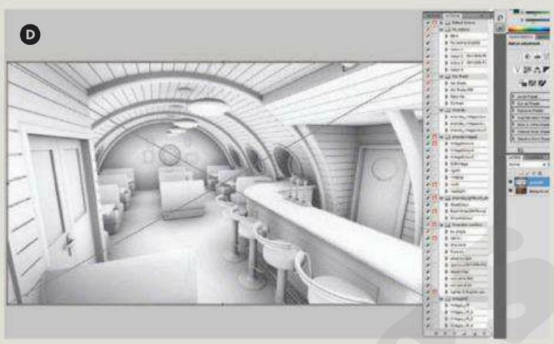


only sees mostly external or exposed surfaces. It can lead to concealed or internal areas being very dark or black.

To avoid this, using the Ambient Occlusion node is often a better route to take, as this uses geometry proximity to calculate shading rather than light generated by the scene backdrop. The other advantage of the node method is that if you wanted, you could add the Ambient Occlusion node to your shaders so that it renders in at the same time as everything else. Looming deadlines will certainly make this an appealing option.

01 Edit your surfaces

Selecting your first surface, click the Edit Nodes button. Head to the Add Nodes option, then Shaders and finally Diffuse. Select the Occlusion shader. Set the mode to Ranged and if your model is created to scale, guess roughly the maximum distance for the occlusion. The higher the samples, the smoother the shading. If you are using LightWave 10 then you will see the occlusion update in the VPR view. Otherwise you can use FPrime or hit F9 A.

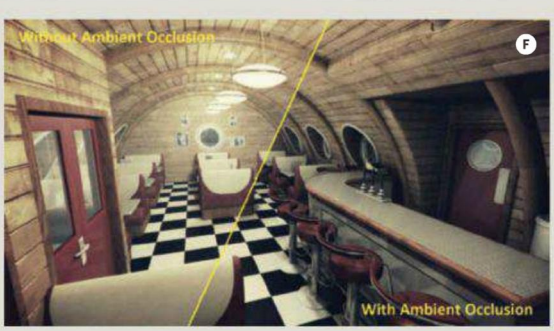


02 Apply the rest of your surfaces

We need all our surfaces to be shaded with ambient occlusion. You can do this two ways, first by copying the Ambient Occlusion node from the first surface and then pasting it back in to the Node Editor for each of the remaining surfaces. The other option is to copy the whole surface and paste it over all the others in one go by multi-selecting all the other surfaces B.

03 Test the settings

Test your settings with an F9 render, VPR or an FPrime render. I aim for a fair spread of occlusion to avoid too many glaring, white, open areas. Just increase or decrease the Max Range parameter until you get a good balance. A more subtle occlusion will blend nicer when comped with a colour render. When happy, do your full render and your standalone AO/Clay render is done C.



Animation and occlusion baking

Adding occlusion to a rendered still is straightforward, but what about an animated sequence? The method here would see you rendering your entire frame range twice. A better solution would to UV map your model for baking the occlusion in the Baking Camera. Make sure that you have no overlapped polygons in the UV set, as the occlusion will either be incorrect or rendered black. Once baked, the bakemap can be applied to the Diffuse channel of your surfaces, so you won't have to render the occlusion separately.

04 Move to Photoshop

With our ambient occlusion render turned out, we can now look beyond the simplicity of showing our model off in its most basic form. Load up your colour render first, then select and drag your ambient occlusion render. Now bring your render in as Layer 2. Click the tick confirmation button to accept the Smart Object placement. Toggle the layer on and off to make sure the render alignments match each other D.

05 Combine your renders

The mode for Layer 2 should be set to Multiply and you will see your colour render but with richer shadows and shading from the dark areas of the occlusion render. Toggle Layer 2 visibility again to see the difference the occlusion render makes. Adjust the layer opacity to give the dark shading the contrast and visibility that you want. In this example I found that a value of 75% worked well E.

06 Complete the image

To grade this render I used the Lens Correction filter in Photoshop on the Background layer to add some chromatic aberrations. Next I added a duplicate layer blurred slightly and set to Color Dodge mode at 20% Opacity. Next a new layer was added as a neutral colour Multiply layer with a Noise filter included. This was followed by a solid colour layer adjusted to give a mild colour cast F.

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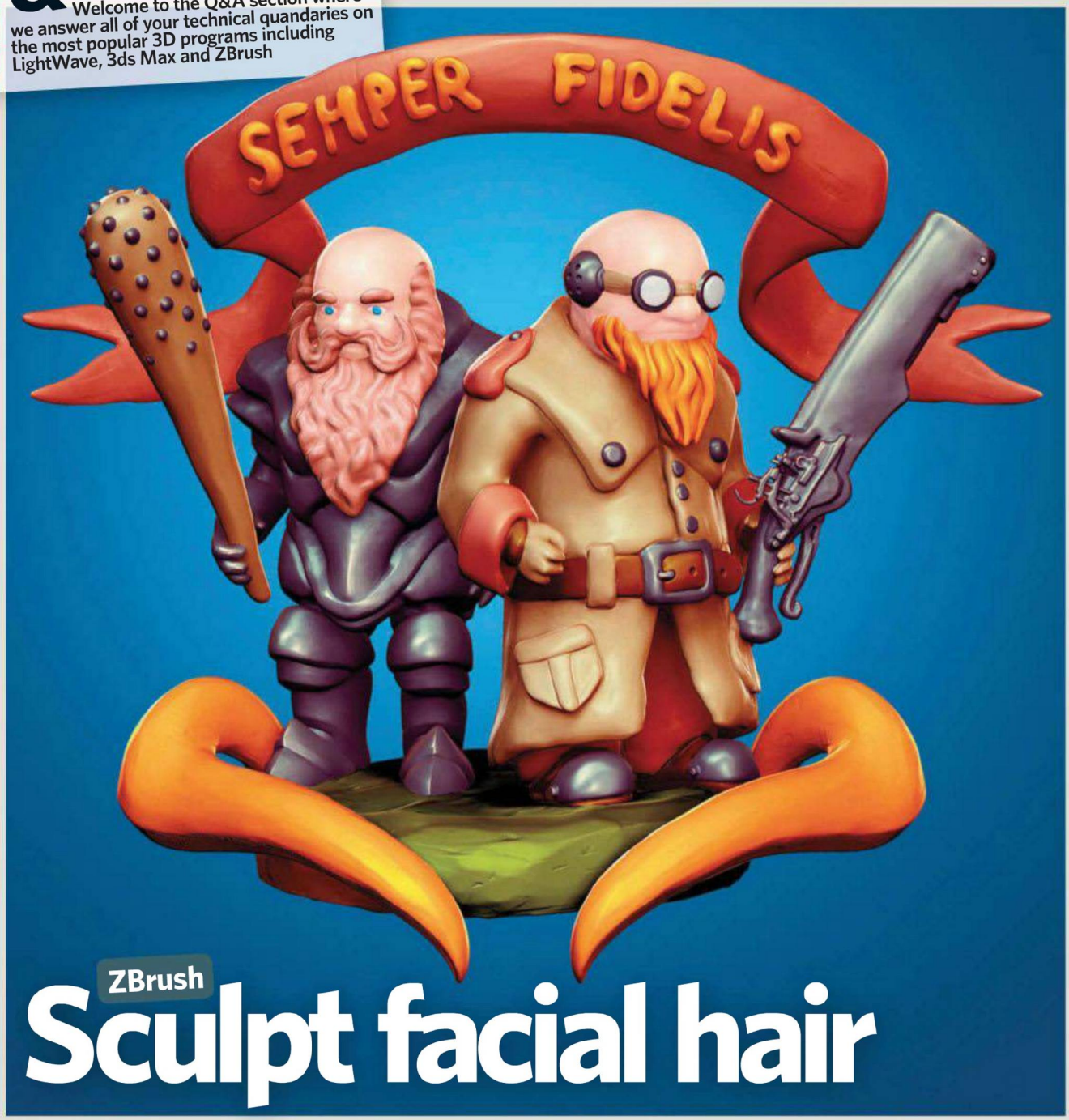

ZBrush

Sculpt facial hair

How can I create a Plasticine-style beard in ZBrush?

A long time ago, before CG effects had become so popular and extensively used in the film industry (when I was a child) I loved watching Plasticine stop-motion animated films. My favourite was a Polish animation called *Plastusiowy Pamietnik* (*The Diary of a Plasticine Man*). I was fascinated by all the morphing effects when characters were converted in unlimited ways into different shapes, creating a little malleable world.

I especially liked that all that magic was created with widely available material: Plasticine (not so widely in Poland in the Eighties, but still). I remember playing with Plasticine characters, developing, moulding and remodelling them into different shapes. It was my physical DynaMesh and really helped to develop my child's imagination and creativity and I think is one of the reasons that I eventually became a 3D artist.

I still love to watch such films like *Wallace and Gromit* – they are of course more sophisticated than the low-budget films from my childhood. But they are no less moody, inspiring, bringing good memories and reminding me of that typical Plasticine smell.

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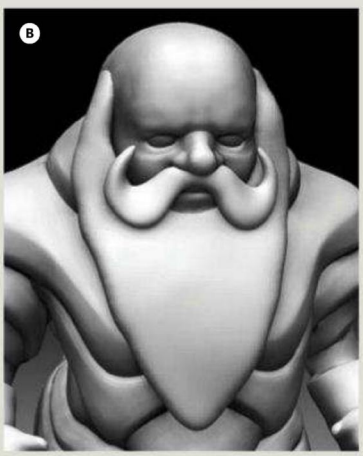


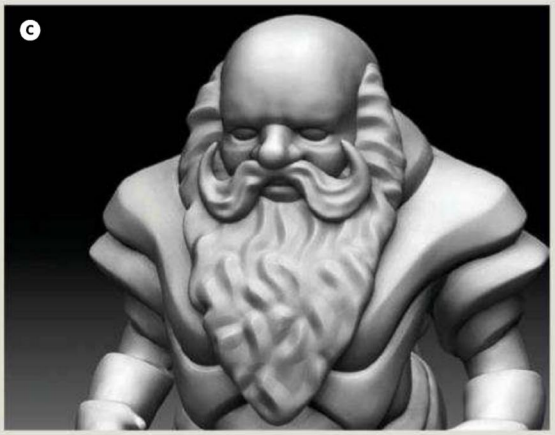
As an adult, I still like to play with Plasticine: digital clay. Thanks to ZBrush I can feel the moulding magic in the digital world. ZBrush tools, brushes and the newly introduced DynaMesh enables us to simulate the effects of surfaces sculpted by hand with an almost finger-painted texture quality.

In this tutorial I am going to show a part of my workflow to describe how I achieve this natural, traditional clay look. I will create a beard as an example, but of course the modified surface processing method can be used to create any part of your character.

It is important to think in a traditional way when working in ZBrush, even though you're in a digital environment. Work as if your fingertips and a spatula are your only tools. Forget about perfectly smooth surfaces, tiny clean details, and very sharp edges. It's time to use large brushes, rough surfaces and inflated, round shapes.

01 Get prepared

Let's begin by creating a base for the beard. Mask areas on the character's face where you want the beard to grow, press Extract Polys To A New SubTool and then Accept. It's important to adjust the Extract Visible Thickness slider, to avoid any errors when we're in DynaMesh. I recommend creating separate SubTools for your moustache and beard, so select a new SubTool and press the DynaMesh button to activate the function A.



02 Open DynaMesh

To adjust the shape of the mesh according to my design vision, I mainly use the Move, SnakeHook and TrimDynamic brushes. I start with lower-res and then adjust it to achieve the desired results. Each time the polygons become stretched I recalculate DynaMesh by pressing the Ctrl/Cmd key and dragging the cursor onto an empty canvas. I don't add any details now. I will do this later, after transforming the object to a regular Polymesh B.

03 Sculpt some curls

Increase the Polymesh Subdivision resolution and start sculpting curled strands with the Slash2 brush. You can find this in LightBox>Slash Brushes. Make sure to sculpt with loose, smooth, intuitive strokes. Also it's important to not overdo the effect, so use the Smooth brush to flatten out the strands. As our goal is to achieve a Plasticine look, we'll add the finishing touch with a few more select brushes C.

04 Use the Rake brush

I start to add volume to the strands with the Inflate brush, using it lightly with a low pressure. After that I use a TrimDynamic brush to flatten some parts and add a handmade effect to the surface. To finish I use the Clay brush with very light strokes across a few areas of the mesh. To add a fingerprint texture I use the Rake brush in ZSub mode and trimmed it with the ClayFinish brush D.

05 Build a goatee

For a different style beard I'm going to use another creation method to achieve a goatee. The beginning is very similar to Step 1, extract a mesh from the character, use DynaMesh and make it cone-shaped. Then use a Layer brush to mask some strands on the surface, trying not to paint them too close to one another.

Slashing fur

You can use these methods not only to create beards but also hair and fur. I have found using the Slice brush method the best for creating fur, crests and curly hair.

Try to modify Alpha Adjustment Curve (the Alpha Menu), Z Intensity and Draw Size to find the best solution for your desired look. Sculpt with smooth, loose, spontaneous strokes, and don't be too precise here. Try not to plan the next stroke – if it doesn't look right, you can always undo it. The more chaos, the more natural it will look in this case.

After adjusting the Thickness you can then extract them E.

06 Final effects

Choose the new Strands SubTool and use Inflate Deformation. Activate DynaMesh and start moving and stretching the strands with the Move, Move Topological, and SnakeHook brushes. To add some volume use the Inflate brush. Increasing the DynaMesh resolution helps me to keep the strands separated. To add a hand-processed touch to the surface use the TrimDynamic brush.

Now we can add some further dimension to the beard and give it real character. Switch to the cone-shaped beard core and sculpt some background strands with the Dam_Standard and Inflate brushes to finish F.

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3ds Max

Floorplans with 3ds Max

How do I create a 3D floorplan for presentation purposes?

In this short article we will be looking at creating a 3D floorplan from a set of 2D plans. While many of us have probably seen enough 2D floorplans to last us a lifetime, creating them in 3D can actually prove beneficial to both you as an artist and your clients.

One reason for this is that 3D floorplans communicate the space more effectively, therefore increasing the chance of a client wanting to invest in them. An example of this is with property websites – they now show 3D as well as (or even instead of) 2D plans for their new builds. In addition to this, not everyone is able to interpret 2D plans easily, so this gives them a helping hand.

The process of creating these plans is relatively simple, so if you often create 3D visualisations, it might be worth considering presenting 3D plans as another service to offer customers.

Let's look at an overview of the process to give you a good understanding of what is going on. The first step is to make sure that you have some 2D floorplans from the client, or documents direct from the architect. This will ensure that your 3D model is built from accurate dimensions if you are consistent in snapping your 3D to the 2D lines provided.

We will then go on to create the geometry. As this is such a brief explanation we will only create the walls; however, you could create all the furniture and set dressing if you so wished.

With that completed we will texture the model, bring in an image of the 2D floorplan to place on the ground and then render out the finished view. We won't be able to cover the lighting or rendering details, as we need to stay focused on the other parts of the process.

Unfortunately, due to space limitations here, we won't be covering the post-production stage for the image, but in our studio we like to render out different layers of the plan so we can play around with transparency and line work. For example, some of the walls may work better being transparent so you can see through them into the room. This makes the plan even more accessible.

Alternatively, you could have some of the walls just as line work to give an impression of the wall rather than obstructing the view. There are many options to choose from, so have a play around and think creatively beyond what you can learn here.

Final thoughts

Next time you're working on an architectural project, it might be worth speaking to your client to see if they would be interested in having a 3D floorplan as well. Remember that these skills add value to a project and if the client can see the added value then they are more likely to buy into the idea – and you. Have some fun, experiment a little and see what you can come up with.

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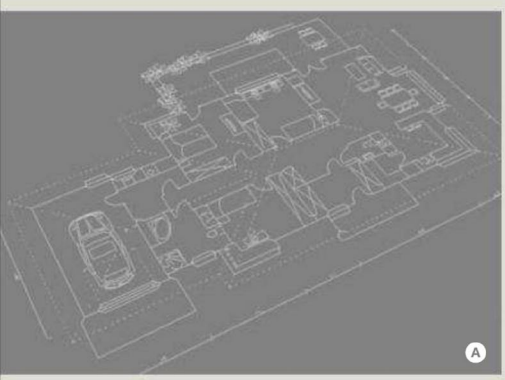
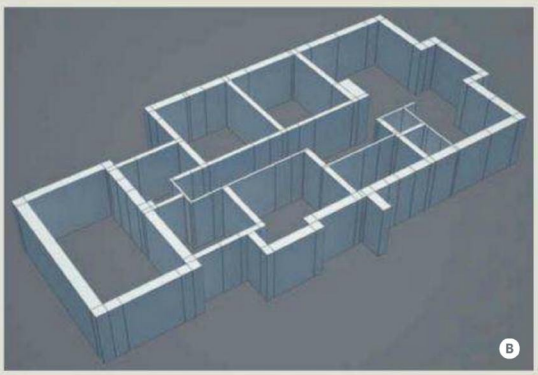
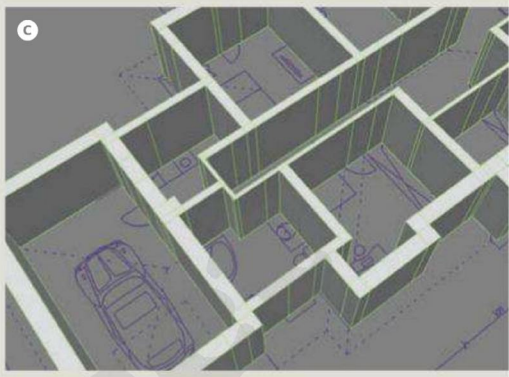






01 Import the 2D CAD plans

Back in issue 38 I did a Q&A section on using the File Link Manager. This enables us to create a live link between the drawing and our Max file. To do this go to File>References>File Link Manager. Select your file, set the preset and click Attach this file. Now if the DWG file changes, so will the drawing within your 3ds Max file, which is very useful A.

02 Create the model

To create the walls, trace round the line work using the Line tool. This can be done quickly without much concentration. Add the Extrude modifier to your line and set the height of your walls in the Amount box. After converting the object to an editable poly, the windows can be created by slicing out the window lines (using the elevations) using the QuickSlice tool. Alternatively, you could use the ProBoolean Compound Object and subtract the window shapes out B.

03 Set up the materials

With the walls created and any other objects that you want (like furniture) inserted, it's now time to set up the materials. You could go for any wall colour you want, but in this example I've used VRayEdgesTex in the Diffuse slot to give my walls a sketched look. You could also add in a VRay dirt map into the Diffuse slot to add definition between objects C.

04 Turn the DWG file into an image

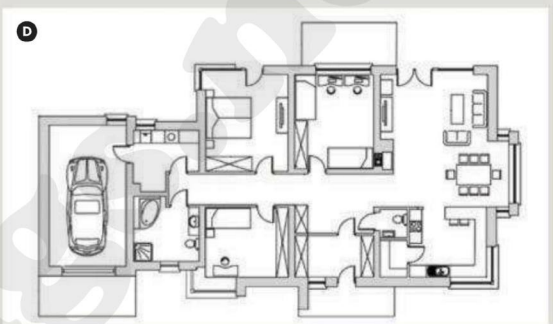
There are many ways you can do this. For example, you could use a DWG to JPG converter, which can easily be found online. Alternatively the longer way is to open the DWG up in AutoCAD, go to File>Export and choose PDF. You can import this directly into your drawing package, or if that isn't possible then you could use an online PDF to JPG converter. Once you have your JPG you can bring it directly into 3ds Max D.

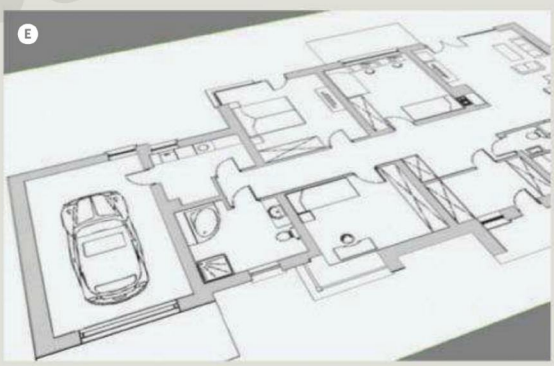
05 Map the image plan onto the floor

Here we need to import the previously created JPG and put it into the Diffuse slot of our material. Create a plane to the dimensions of your newly created JPG, which will ensure that the aspect ratio is correct. Finish by uniformly scaling the plane so it lines up with the DWG you were working with earlier. You can also add a VRay dirt map to this object in order to create definition where objects are closer together E.

06 Further suggestions

You could make adjustments to the 2D floorplan image to make the final visual more interesting. For example, you can use a drawing package and add splashes of colour to various parts of the design. Since a 3D floorplan is pretty much like a house without a roof, you could also place fully textured furniture inside. Finally, you could implement a cutaway where parts of the walls fade in to give a better view of the space within F.





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Traditional Life drawing

On the Disc
40+ minutes of video training

I've heard that practising traditional art techniques, such as life drawing, can improve your 3D. What's the best way to tackle a figure-drawing project?

Many industry artists believe that a good knowledge of traditional art techniques can prove very beneficial to your 3D work. Life drawing in particular offers the chance to familiarise yourself with different poses, shapes, light and shadow. You can then use this as the basis from which to concept all manner of creatures and characters.

To truly capture the essence of a human form is an exercise in artistic discipline, focus and, usually, the result of countless hours of relentless rendering. This is regardless of the chosen medium or number of planes in space the subject being created may reside. While the art form itself may not be intrinsic or come very naturally to many creatives, it's so ubiquitous to the nature of art and artists that it is an artistic virtue arguably worth striving for.

Whether you are rendering 3D art on a digital platform, or basic figure drawing with a pencil and paper, the key to success always leads back to one thing: experience. Nevertheless, two academic approaches to effective visual communication of the figure are apparent, historically and traditionally. The first is a sculptural approach, much like that taken by Michelangelo, known as Constructive Anatomy. It's based on a fundamental knowledge and thorough understanding of human anatomy as well as the three-dimensional form.

On the other hand, there are artists out there that work almost solely from observation, beginning first by marking patterns of light, shape and constructing the overall figure silhouette.

It's a technique that artist Mark English uses and teaches at The Art Department (www.theartdepartment.org). Over the following six steps, you can find out the typical workflow for tackling a life-drawing project, plus some handy hints and tips on materials and more. There's also a 40-minute video clip of this process on this issue's disc, so you can watch over Mark's shoulder as he works.

01 Choose materials

While it may be tempting to buy lots of equipment all at once, a simple set of supplies is all that's needed in this instance. This consists of a few sheets of toned charcoal paper with a slightly rough texture, Nupastels and your fingertips. Using your digits ensures you can build layers of colour and value into your figure study relatively quickly and easily A.

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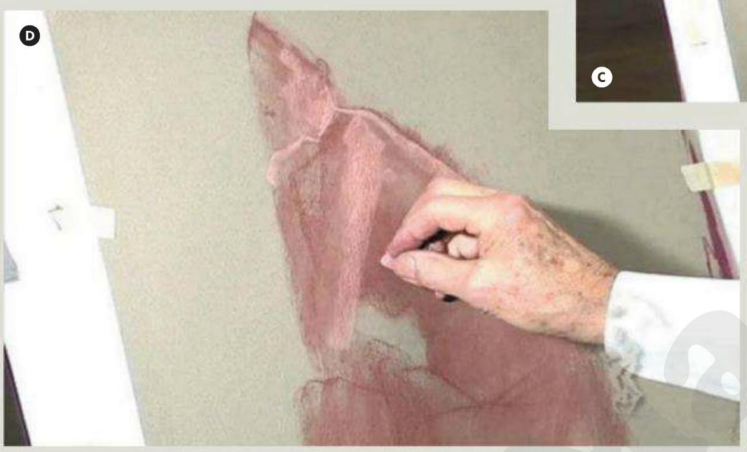

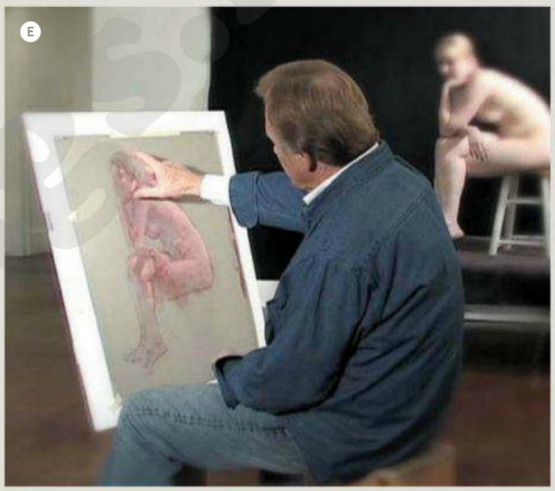

02 Build shape

Start by blocking in the overall silhouette and capturing the essence of the pose. Pay close attention to the large shapes, gesture, positive and negative spaces created by the model. It's easy to get lost in the details, only to find the proportion of our drawing is wrong or the full image doesn't fit in to the space dedicated to it. To save time, avoid fully rendering areas of the figure that may need to be moved or reworked later B C.

03 Compare and contrast

Once you have the initial silhouette blocked in with a pastel colour apparent in the majority of the model's skin tones, choose a pastel colour that is associated with what you see on the figure in the broad shapes of light. Block in those shapes of light and study the contrasting patterns of value. Pay attention to how the figure sits in space and what mood is being conveyed D.

04 Use moderation

Soften any hard edges at this stage using the flat side of the pastel, rather than the edge to keep the overall value and plans simple and flexible. Working from direct and peripheral observation can be challenging in itself. Remember, always work to give the viewer a place for their eye to rest – too much detail can be distracting. Figure art is just as much about what is not drawn as what is translated to the page or screen, so always try to keep it simple E.

05 Focus attention

Once you feel the light and dark value patterns are in the appropriate places, start working on the more detailed areas of the piece. Flowing naturally between the side and edge of the pastel, the hard and soft edges are used to control space, focus, mood and atmospheric perspective. This is where objects far off appear softer, or due to the nature of our vision while focusing on something in the distance, things closer can be blurry. The area with the most focus should contain the most contrast of shape, edge and colour F.

06 Note tonal difference

Next add a cooler tone, conveying the light being reflected onto the shadows, increasing the colour range with the toned paper colour partially showing through as an atmospheric colour in some areas.

Strike a clear balance of smooth, soft areas with rough, textural chalk on the paper surface where the pastel is not rubbed in with your fingers to represent convincing living form and overall mood. The stronger the light, the more opaque the pastel becomes, as it is slowly layered until the value and colour range between light and shade feel like light itself G.

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3DArtist Back to basics

CADS 3D's Paul Hatton demystifies 3D lighting setups using 3ds Max and V-Ray

3ds Max & V-Ray

Create a studio setup

We are going to look at how to build a studio environment, including the backdrop, lighting and cameras

Being able to create a studio environment is vital for any 3D artist. As a design studio in the east of England, around a third of our work involves setting up a subject within a studio environment. We take this setup and use it to create still images, videos and interactive files. The beauty of it is that it's a controlled environment with a few lights, materials and a camera.

Another added bonus is that by learning how to do this, you'll also have a solid understanding of how lights, cameras and materials all interact to create the final image. You'll then be able to take this knowledge and build on it with further commercial or personal projects.

A studio environment is simply a setup whereby the background, lighting and cameras are all organised in the same way a photographer would be if they were photographing something, like a product or a model. A photographer will want to achieve a constant background colour, with soft shadows, and that's what we want to achieve in 3D.

One of the many benefits of creating this in 3D rather than with photographic equipment is that not only is it cheaper in many cases, but also the product doesn't

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B

have to exist in the first place – you could simply create it in 3D. In addition to that, you're able to make changes on the fly as and when requested by the client.

So back to the studio setup's elements – they consist of the backdrop, lights and the camera. The subject can be anything you want it to be. We simply decided on party hats to celebrate Issue 40 of 3D Artist. In terms of the backdrop, the key here is that it shouldn't include any sharp corners. We want a smooth background – also referred to as an infinity wall. It needs to be able to provide soft shadows, which will enable the viewer to focus on the subject and not the background.

The lights are the most important element as they can have the biggest impact on the final look and feel of the object. We'll be setting up a three-light rig: two lights either side of the subject and one above the product. From here, we will refer to these side lights as key lights. They are the main sources of illumination and contribute the most to the overall colour and feel. The third light, meanwhile, will be referred to as the bounce light. This is because it is pointed towards the ceiling and therefore bounces the light back into the scene. It also provides a really nice diffuse light into the area.

For the camera we'll set up a physically accurate camera with real-world properties, including its f-number and shutter speed. By doing this we can control the exposure and also how much light is let in.

In terms of software for this beginners' guide, we'll be primarily using 3ds Max 2012. Earlier versions will be fine, though. V-Ray 2.0 will be the renderer of choice due to its realism and commitment to development. Every release of the software brings a multitude of improvements and additions that help our workflow in the studio. However, despite us using V-Ray, it's important to note that all the principles can be applied using mental ray, which ships with 3ds Max.

While it is possible to buy pre-made studio setups, such as The Studio Light Rig from the A&G Tool Company, the following two pages will explain how to manually set up your own studio rig. Hopefully by the end of this tutorial you'll be equipped with the necessary tools not just to follow a set of steps to achieve your end-goal, but also to fully understand the process. This is so you can tweak the lighting and setup to suit your own personal needs, and really make the process your own.

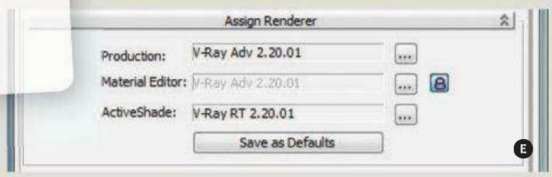
C

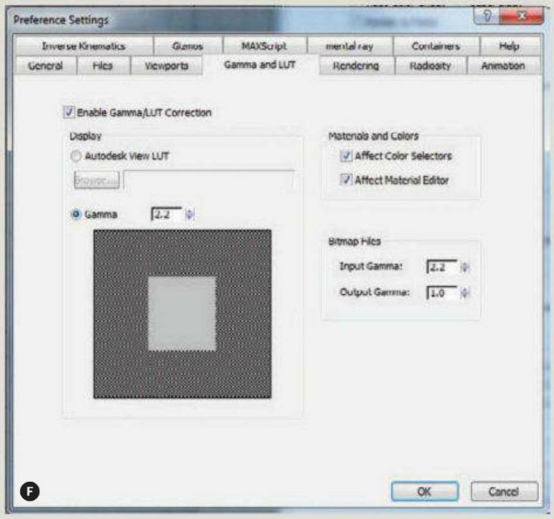
A Here is what we will be creating, step by step

B A different angle on the main subject we'll be working with

C A shot of the two hats with Depth of Field enabled

Back to basics





Begin constructing your own virtual studio

01 Set up your units

One of the first things you need to do is to make sure that your scene is set up to work in real-world units. This ensures that everything in the scene works in a physically accurate manner. To do this, go to Customize and Units Setup. Activate the Metric radio box and select Centimeters from the drop-down box D.

02 Assign the renderer

For this tutorial we will be using the world-famous V-Ray renderer from Chaos Group. Press F10 to open the Render Setup dialog box. Make sure you're on the Common tab and scroll right down to the bottom where there is an Assign Renderer rollout. Click on the three dots next to Production and choose the V-Ray renderer. Please note that this isn't a built-in renderer and must be installed separately. Feel free to set V-Ray RT as the ActiveShade renderer for real-time rendering E.

03 Enable 3ds Max Gamma correction

We work using a Physical or Linear workflow in our studio. There isn't room here to explain in detail, but the various settings required will be covered as we progress, from which you'll be able to build at a later stage. All we need to know practically at this stage is how to enable Gamma Correction from within 3ds Max. Go to Customize and Preferences: then click on the Gamma and LUT tab. Make sure Enable Gamma/LUT Correction is ticked and set the Gamma to 2.2. Tick both Affect Color Selectors and Affect Material Editor. Set the Input Gamma to 2.2 and the Output Gamma to 1.0 F.

04 Create the stage

Now it's time to create the stage that will house our product. Do this by going to Create, followed by Shapes and then Line. With that selected draw a line with five points in a C shape. In the Modify panel, select the line and scroll down to the Interpolation tab. Make sure it is set to Adaptive, then scroll down to the Geometry rollout and use the Fillet tool to smooth the sharp corners of your stage. Finally to finish this step go to the Modifier list and choose the Extrude modifier to give the line some more length G.

D The Display Unit Scale is set to Centimeters

E The Production renderer is set to V-Ray

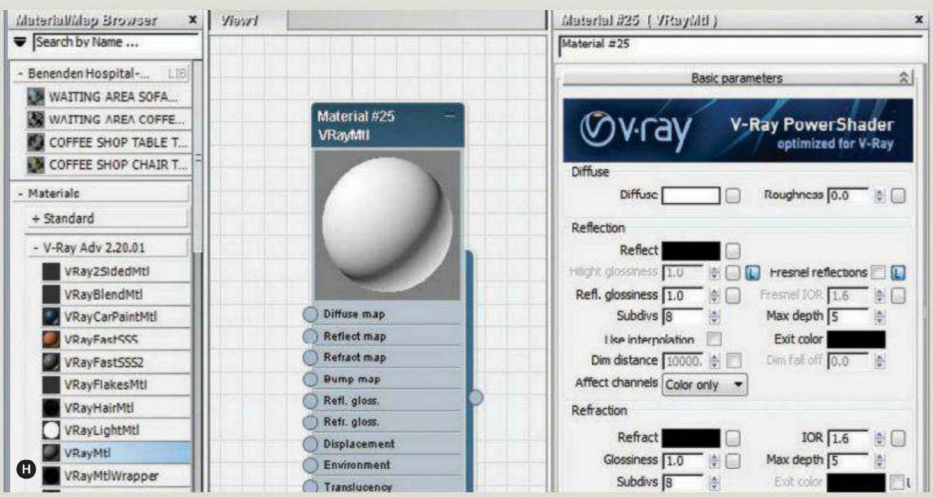
F Here we enable the Gamma Correction from within 3ds Max

G The three main steps are: create the line, fillet the vertices and extrude them

H A simple V-Ray material with 253 RGB in the Diffuse colour

Use the V-Ray Physical Camera

We use the V-Ray Physical Camera because it enables us to adjust the same types of settings as we would expect to see on a DSLR. You can therefore adjust the f-number to alter the size of the aperture. Essentially, the lower the f-number, the wider the aperture and the more light that enters the camera. We use f-numbers that we would expect to see on a DSLR like 2.8, 5.6 or 8. The shutter speed determines how long the shutter is left open, the higher the number, the shorter the shutter is open. Finally, the higher the ISO, the more sensitive the film will be to any light.



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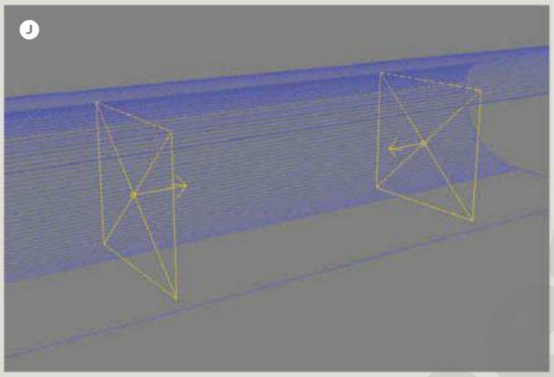


I We chose party hats, but you can choose anything

J Two key lights set up on the stage

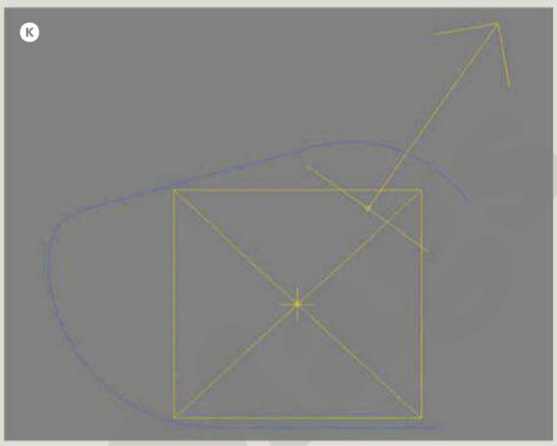
K The bounce light is set up to face towards the top ridge of the stage

L The V-Ray Physical Camera is set up

M Prepare the rendering settings

Light and camera settings

Please note that even if you follow these steps, your final visual may look and feel different. This will be due to the light multipliers, the light colours and your camera settings. Take the time to play around with your settings. Adjust the intensities of the light, change their colours and have a play with your camera exposure settings. This is the only way that you will fully get your head around how these things work. It will also enable you to more easily solve problems if things don't look as you would like.



05 Texture the stage

We want a fairly basic nearly white background to our studio to help keep the focus on the main subject. Do this by hitting M to bring up the Material Editor. We like to use Slate because of its node-based setup, but it will work just as well in the Compact setup. Create a V-Ray material and set its Diffuse Colour to 253 RGB. This is very slightly off-white because making materials pure white or pure black can at times cause V-Ray to produce some unexpected and undesired results H.

06 Insert the subject

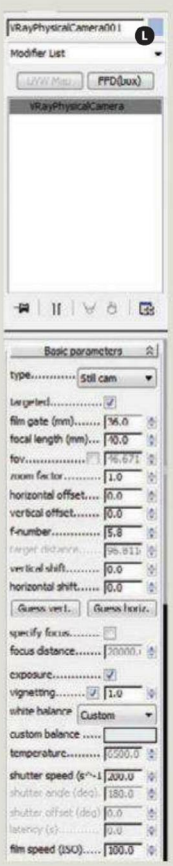
Now it's time to bring in your product, or whatever you want really. It could be absolutely anything, within reason. We're in a bit of a party mood so we've decided to use these party hats as our primary subject. They are available from www.cgaxis.com. To merge your item in, go to the 3ds Max icon at the top-left corner and choose Import followed by Merge I.

07 Set up the two key lights

Now we need to set up our light rig. We'll use two key lights and one bounce light. The first key light will provide a cool blue light and will be on the left-hand side of the stage. To create it, go to Create>Lights>V-Ray and select V-Ray Plane Light. In the viewport, drag the light out to create it. Its length, width and multiplier will depend on the size of your stage but for reference, mine is 50cm in length, 45cm in width with 120 as the Multiplier. The RGB value is 173, 197, 226. Duplicate this light, put it on the right side of the stage and give it a Multiplier of 160 and an RGB value of 229, 200, 173. This will give it a warmer feel J.

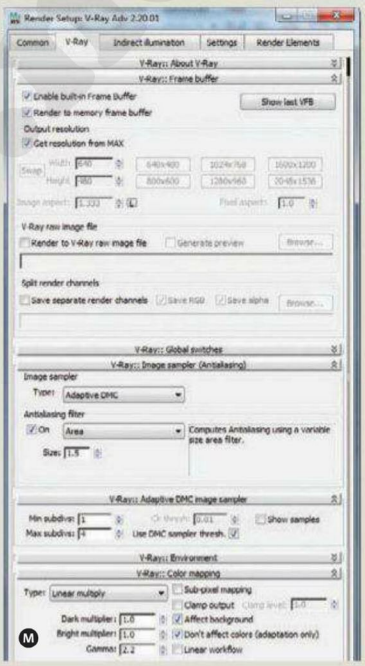
08 Set up the bounce light

With the two key lights created, we must now set up our bounce light. The reason it's called a bounce light may seem pretty obvious but if you're not sure then it's basically because it bounces light off the top ridge of the stage and back towards the subject. This causes the light to diffuse out and create softer shadows. To make this, create another V-Ray light that stretches between the two key lights and is pointing at the top ridge of the stage. Give it a Multiplier of 20 and off-white colour. We went for an RGB value of 220, 230, 243 K.



09 Create the camera

With our lighting all beautifully set up, it's time to get a camera into the scene. Go to Create>Cameras>V-Ray and select V-Ray Physical Camera. Place it in your scene in front of the subject. Give it an f-number of 5.6 and a slightly blue Custom Balance to remove this colour from the final render. This will give the image a nice warm feeling. Finally, make the shutter speed 200 and the ISO 100. These settings once again adjust the exposure L.



10 Begin to render

These are the settings. Press F10. In the V-Ray tab and Frame Buffer rollout, make sure Enable Built-in Frame Buffer is selected. In the Image Sampler rollout, set the sampler to Adaptive DMC. In the Adaptive DMC image sampler rollout, set the min subdivs to 2 and the max subdivs to 5. Scroll down to the Color Mapping rollout. Make sure the Type is Linear Multiply, set the Gamma to 2.2 and finally tick the Affect Background and Don't Affect Colors (adaptation only) check boxes. Go to the Indirect Illumination tab and turn on GI with primary GI engine as Irradiance map and the secondary as Light Cache. Click Render and select the sRGB button on the V-Ray frame buffer M.

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Workstation Specialists WS 2850 £4,955 ex VAT

Intel's latest generation promises more rendering power in one workstation than ever before

The workstation market appeared to have settled down over the last year, but this was clearly the calm before the storm. Thanks to the release of a new processor range from Intel codenamed Romley, we haven't had so many manufacturers clamouring to offer us systems for some time. Our lucky first look comes from Workstation Specialists, with its WS 2850. So what's all the fuss about? You're about to find out.

Over the last year, the main workstation news has centred on Intel's Sandy Bridge architecture. However, while this offered strong performance for the money, it was a mild step backwards for some tasks. The Sandy Bridge Core i7 and Xeon E3 were quad-core, whereas the previous-generation Core i7 desktop processor offered six cores, and there were previous Xeons with as many as ten cores. With the latest E5 generation, however, the core count has leapfrogged to eight, and these are readily available in dual-socket DP configurations.

For this review sample, Workstation Specialists' WS 2850 uses a pair of the midrange Xeon E5-2670s. These run at a fairly modest 2.6GHz, but otherwise have all the same features as the other eight-core models. Turbo Boost can temporarily increase one or two cores to 3.3GHz, or all eight to 3GHz. Hyper-Threading is also on hand, so each one presents 16 virtual cores, for a

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whopping total of 32 parallel threads. The twin CPUs have been partnered with a healthy 32GB of PC3-1600 ECC DDR3 memory, which may seem like overkill but should give each core enough to work with when running multiple threads. There are also eight slots remaining free for upgrade, so there's potential for growth even from this healthy starting point.

Workstation Specialists has taken a cost-effective approach to the graphics in the WS 2850 as well. The now de rigueur NVIDIA Quadro 4000 takes care of 3D acceleration, providing decent 256 CUDA cores and 2GB of GDDR5 frame buffer. This is still a very dependable and powerful choice for most modelling needs. The storage provision is relatively standard too. A single 120GB Intel 520 Series solid state disk takes care of the operating system and apps, providing ultra-quick booting and app launching, while a pair of 1TB 7,200rpm Seagate 7200.12 hard disks are included for main data storage. These have been joined as a RAID 0 array for enhanced performance. A 22x DVD rewriter rounds off storage, as no memory card reader has been supplied.

The big news of course is the performance, and here the WS 2850 lives up to expectations. The score of 20.21 in Maxon Cinebench R11.5's rendering test is only fractionally behind that of Boxx's 8550 Xtreme, which only had 12 cores but each one was running at 4.2GHz. The Boxx was also significantly more expensive. The Cinebench R11.5 OpenGL score of 59.21 is one of the top results we've seen too. Results in SPECviewperf 11 weren't quite so earth-shattering, however, thanks to the mid-range per-core clock speed, with 37.23 in lightwave-01, 52.3 in maya-03 and 32.24 in sw-02. But rendering is really where the core count is aimed. It's also worth noting that this was an early review sample, and Workstation Specialists were running the memory at a slower setting than the full production system due to a motherboard issue that will be ironed out prior to release.

This is a very promising start for the new Intel chips, and backs up the vendor interest we've seen. The WS 2850 specification provided for review is more accomplished at rendering than modelling, though is still capable at the latter. It's not a cheap workstation, but when you consider it has the rendering power of small render farms from a few years ago, it's a 3D content creator's dream come true.

The good & the bad

- ✓ Excellent rendering
- ✓ Good modelling
- ✓ Room for upgrade
- ✗ Relatively expensive
- ✗ Better at rendering than modelling presently

Essential info

www.workstationspecialists.com

• £4,955 ex VAT

SPECIFICATIONS

- 2 x 2.6GHz Intel Xeon E5-2670
- 32GB 1600MHz DDR3 SDRAM
- 2GB NVIDIA Quadro 4000
- 120GB Intel 520 Series solid state disk
- 2 x 1TB Seagate Barracuda 7200.12 7,200rpm SATA hard disk
- Windows 7 Professional 64-bit
- Warranty: 3 yr parts and labour

Our verdict

Features	9/10
Performance	9/10
Quality of results	9/10
Value for money	8/10

"A rendering powerhouse with decent modelling, this is a promising first look at Intel's latest processor offering"

Final Score 9/10

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Datacolor Spyder4Elite

£180/$250

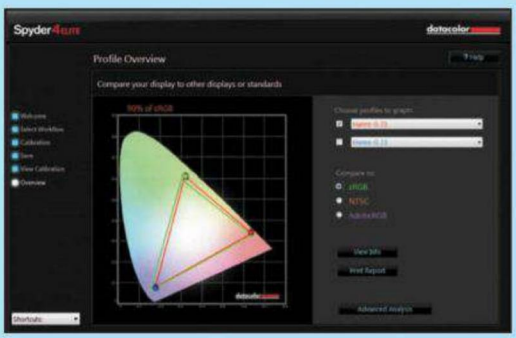
Make sure your monitor is set up for the optimum display of colour and brightness and check whether it's accurate as well

While interpretation of colour is subjective (we all see it in slightly different ways) having a properly configured monitor is essential for anyone working in a creative field that deals with images. Being able to standardise your display means you can have more confidence that the colours, highlights and shadows you see will be displayed just the same on a client's calibrated monitor. It's not just a question of having the optimum settings on your monitor either – you need to know how much of the colour profile you are working with is accurately displayed on the monitor itself. This is where Datacolor's Spyder4Elite comes in, with an advanced calibration test that covers both regular and wide gamut displays, presenting a percentage of gamut-covered graph and offers a monitor quality rating as well as a host of specialist readings. Compared to Datacolor's Spyder3, the new system is claimed to be 26 per cent more accurate.

Once the software has been installed it runs a checklist of tasks to make sure you are set up and ready to go. Then the type of display can be selected as the Spyder can be used on modern LCD displays, older CRTs, laptops and also the output from a projector. Based on the monitor type a gamma, white point and brightness are suggested. The Elite version enables different options to be chosen, but otherwise, it's important to perform the test in regular daylight hours with no strong lights shining on the monitor surface. Once an ambient light reading is taken, the settings are then modified and the calibration can begin. The Spyder has a counterweight so it's easy to just loop over the top and sit it on the screen. This is not entirely automated because as it progresses it requires the user to adjust the monitor settings so that they match specific targets. If your monitor control panel appears dead centre where the Spyder interface is running, it can mean some fiddling about. Once completed there's a chance to both check the calibrated result using a series of type colour and mono images and also to tweak it if the result isn't quite what you want.

After the calibration, the next stage is to see how accurate your display is in terms of sRGB, NTSC and AdobeRGB profiles. Analysis for the Spyder4Elite covers more tests for gamut, tone response, brightness and contrast, white point at different presets, colour accuracy and screen uniformity.

Once calibrated the display can then be checked using a set of images. Toggle between the calibrated and original settings and tweak them



Getting the monitor set up is one thing, but ensuring that it's displaying enough of the colour profile you and your clients are using is another

The Spyder kit consists of a software utility and the hardware to check the ambient light and hang over the monitor for the calibration tests

www.datacolor.com

Our verdict

Features	8/10
Ease of use	8/10
Quality of results	8/10
Value for money	7/10

"An essential tool for anyone working in 3D to ensure the most accurate and quality results"

Final Score 8/10

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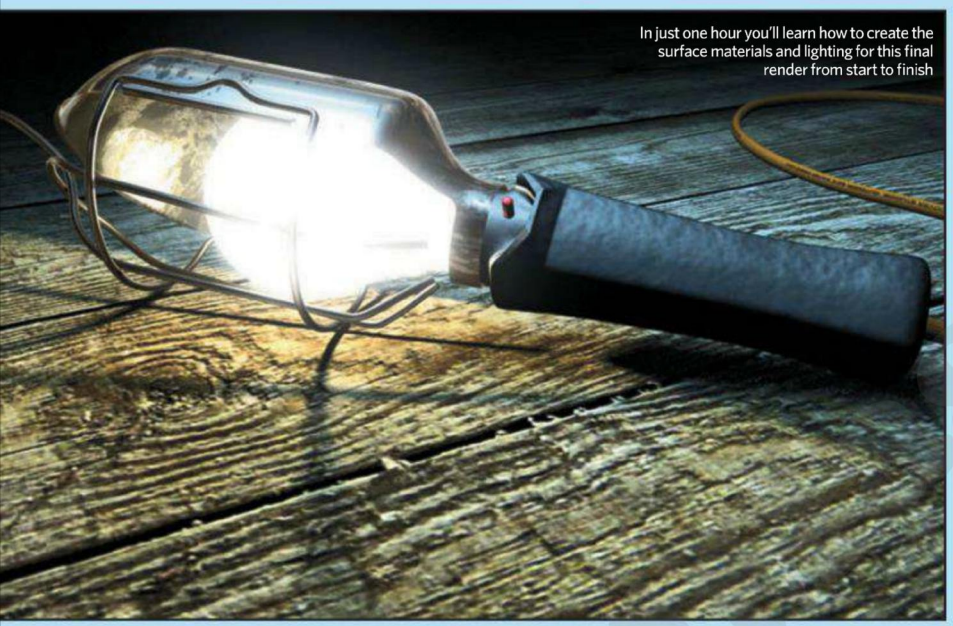
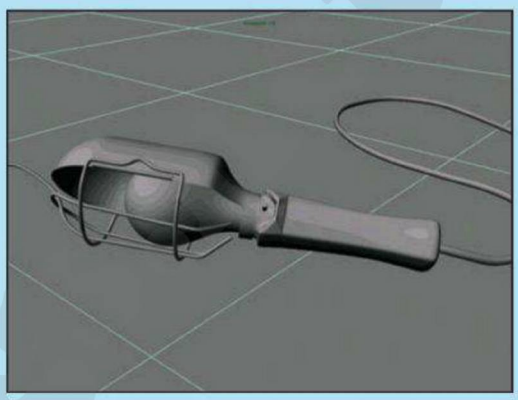
Maya Advanced Surface Materials £45 / $71 US

This well-presented addition to the Surface Materials series grabs the baton but fails to run with it



In just one hour you'll learn how to create the surface materials and lighting for this final render from start to finish



The base geometry provided offers a number of material type challenges, if you're prepared you can focus directly on the task

Finishing touches such as adding glow helps to sell the image and can be tricky to set up properly

Brothers Andrew and Russell Hazelden return for the third volume in the Dover Studios Surface Materials series. It's aimed at guiding Maya users through advanced surface material setup, offering tips and techniques for scene lighting and efficient rendering. The prop used for the training is a fairly mundane work lamp model, placed on a floor. The asset serves the purpose though by having a variety of surfaces to create such as rubber, metal, glass and wood.

The lesson consists of a single hour-long full HD video, which is superb in terms of quality; however, it lacks chapter stops so finding specific topics becomes guesswork. An introductory overview covering the basic task of setting up the accompanying scene files as a Maya project is thankfully brief, as advanced users should be fully aware of this procedure. Unfortunately, the next chapter is not so brief, taking ten minutes to cover a pretty basic workflow for using a prepared Photoshop PSD containing Colour, Bump and Diffuse layers, to texture a wooden floor. Surprisingly, you're even told the basics of what Maya's IPR does and what bump maps are for, which will surely only frustrate anyone expecting advanced content from the outset.

It's then on to the work lamp and its power cord. Several nodes are used for texturing these objects such as Ramp, Cloud, Environment Ball and Bump, but this core section of the training lacks in depth too. On the plus side, the training does teach you how to achieve a good result, is presented in a professional manner and easy to follow along with. But any enthusiasm for the main part of the project fails to come across in the dialogue or content, making the task of texturing an everyday object a fairly mundane and not-very-advanced process.

The final sections deal with setting up moonlight in the scene and adding lighting for the work lamp. The Light Linking Editor is used to enable a Point light to illuminate through the light bulb mesh and cast Ray Trace shadows into the scene. This is again standard fare but the training then concludes with perhaps the only advanced topic. This involves sourcing normalization data from the mayaRenderLog.txt to prevent flickering when rendering ShaderGlow, Halo and Glow intensity effects.

Although the final render looks reasonably good, this product fails to deliver advanced surface material training in the quantity you'd want and expect. This makes it somewhat of an overpriced letdown.

www.doverstudios.com

Our verdict

Features	4/10
Ease of use	7/10
Quality of results	5/10
Value for money	4/10

> "Good for production tips and techniques but scant advanced surface materials tuition"

Final Score 5/10

WorldMags.net

Moviestorm Complete – £150/$225, Specific theme versions – £50/$75, Educational licence – £37pa

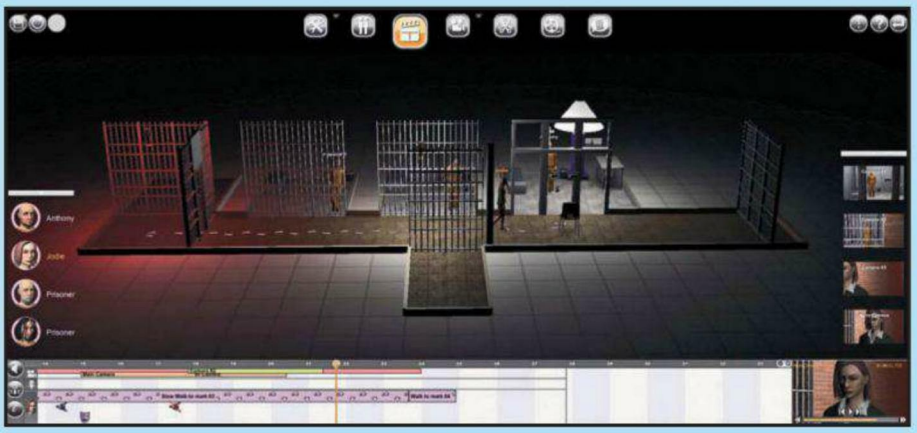
Discover the easy way to make 3D-animated movies with comprehensive characters, bags of content and lots of editing tools

Ever since game engines started to enable users to record videos, the art of machinima has grown increasingly popular. Moviestorm satisfies this desire of non-3D users to create animations and short films by providing an easy-to-use and simple animation authoring system.

In order to get started quickly, there's a choice of 16 template starter-films that can be edited and added to. Alternatively, you can start with a blank canvas. The interface has five main building and editing components, plus a publisher and scripting module. The main sections cover the Set Workshop, Character Dressing Room, Director's View, the cameras and the Editing Suite. This is quite an ingenious method of putting a short film together, as it's themed to follow a more reality-based convention rather than a 3D-animation one.

You start by building the set itself, using props, characters and scenes from the content list. Sets can be built from scratch but the use of a pre-built scene will speed things up immeasurably. You simply need to repaint and re-organise it to get a different look. The character dressing enables the stock characters to be completely manipulated in terms of physical features and also clothing and outfits. This is simple and also fun.

The Director's View is where the action is actually scripted so that instructions can be given to the characters for movement, interaction and speech. Once that is completed you can add a variety of cameras with zooms, pan and depth of field. The Cutting Room is where footage from the cameras can be spliced together, though the interface isn't intuitive or clear so reference to the Help files is a must for beginners.



The Director's View is where actions can be assigned to the relevant people. Here the lead character is assigned a walk path down to see the detainee

No matter what the quality of the animation system, where it stands or falls is in the provision of content. There is a lot of very low-price and affordable content, such as themes, characters and sets. The system now uses Moviestorm points, or MSPs, bought with regular money. The system is scaled so that the more you spend at once, the more MSPs you get for your money.

The key point about Moviestorm is that it is designed for animation and as such is a much better and easier-to-use option than something like DAZ Studio. The downside is that the character graphics are poor compared any 3D package and the animation isn't as natural as you might want. For machinima fans or those creating educational videos, it's a great piece of movie-making software though.

The fun part comes with dressing the characters and then manipulating all their physical characteristics to create different looks

The Cutting Room is where all the clips recorded by the cameras can be put together to make an entire scene

www.moviestorm.co.uk

Our verdict

Features	7/10
Ease of use	7/10
Quality of results	6/10
Value for money	7/10

"A well-designed and fun machinima creation package let down by sub-standard graphics"

Final Score 7/10

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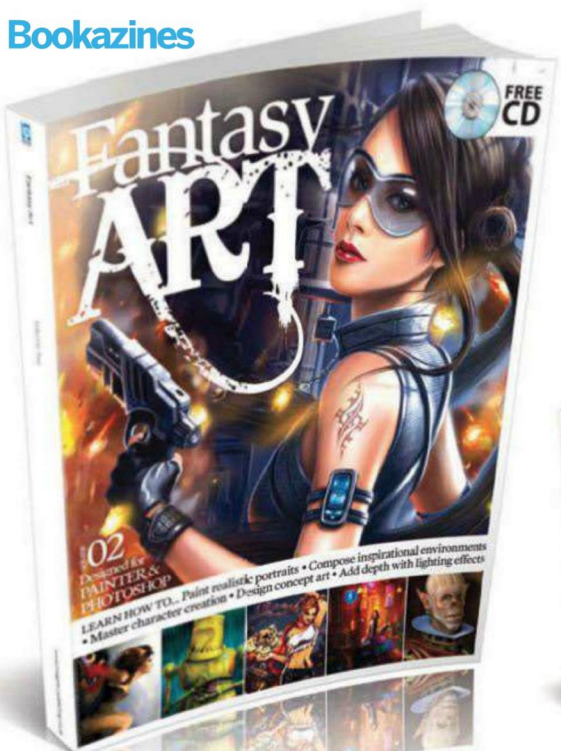
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workspace 3D

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VRZ 1
Vorwaertz uses 3D printing technology to customise frames for track bikes in record timing
www.vorwaertz.com
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A

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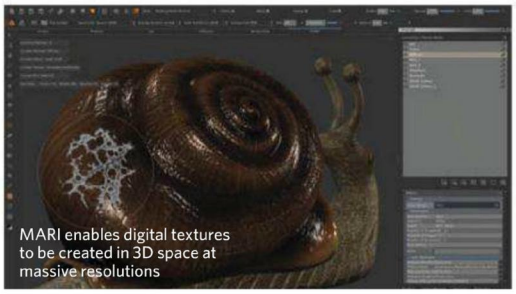

MARI enables digital textures to be created in 3D space at massive resolutions

B

Education discounts from The Foundry

Leading VFX software developer announces up to 95 per cent savings

A NUKEX, MARI and HIERO, The Foundry's packages, are now available at reduced educational prices

B NUKEX comes with an extended feature set, including 3D camera tracking and 3D particle-creation abilities

Student Stars

The Foundry has also launched a Student Stars Vimeo channel to coincide with the new educational pricing. The new channel will play host to some of the best work produced by students, using The Foundry's software – a great way to get work seen and learn about professional-grade VFX tools.

The Foundry, maker of renowned visual effects software solutions including NUKE and MARI, has announced its latest educational pricing policy, offering up to 95 per cent discount on list prices for students and teachers. The policy enables those in VFX-related education and their teachers to rent yearly licences of industry-leading software packages NUKEX, MARI and HIERO for £150/$250 US per year.

With this bold move, The Foundry joins the likes of Autodesk, also offering a heavily reduced educational version of the Entertainment Creation Suite, which consists of Maya, Mudbox, 3ds Max, Softimage and MotionBuilder from £105 (reseller price at http://techstore.escapestudios.co.uk/shop/student-shop.html). The educational versions of NUKEX, MARI, and HIERO (upon release) act as fully functional releases, identical in every way to their commercial counterparts. This enables students and teachers to gain full and in-depth understanding of the industry-leading packages. This is something that could prove invaluable to those looking to gain a competitive edge before entering the industry.

Implications of the move towards the new educational pricing model seem clear, enabling students and teachers a legal and affordable means in which to gain experience. Previously, these students may have been forced to resort to less legitimate means, but now student/teacher licences are currently available, and floating licences can be sourced for use in educational establishments.

Among the newly available range are industry-seasoned packages NUKEX and MARI, both of which make up part of The Foundry's flagship range. NUKEX in particular is very well represented in the industry and is billed as one of the most widely used compositing applications, celebrated for its cutting-edge abilities in node-based compositing. The X version, available at the revised educational price, also features 3D camera tracking alongside other advanced capabilities not found in sibling package, NUKE. MARI, while marginally lesser-known, is also high on the list of purchases for aspiring CG artists – particularly those with a desire to be involved in texturing. MARI enables huge textures to be painted and layered onto a digital model in 3D space, eliminating many of the difficulties associated with common UVW unwrapping tasks.

More information can be found at www.thefoundry.co.uk/education. NUKEX and MARI are available now, priced at £150, with HIERO to follow.

Career development

If you're committed to extra-curricular learning, or perhaps further career development, online training solutions such as Digital-Tutors, lynda.com, and Escape Studios, alongside DVDs from The Gnomon Workshop and CG-Academy, offer masses of specialist content.

> "We wanted to help [students] and our customers by providing an affordable way for them to access the software"
>
> **Bill Collis**, CEO, The Foundry

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Ross Board is a 3D specialist based in London

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Maxon relaunches Cineversity

The creator of CINEMA 4D relaunches its online training platform, Cineversity

Originally launched in 2006 with a handful of videos, Maxon's online education community Cineversity has since grown exponentially, now playing host to almost 2,000 training videos – all created by industry-leading CINEMA 4D professionals.

There are many new features included in the relaunched site, including: improved searching and filtering, user playlists, Cineversity playlists, a new user dashboard, student management tools for teachers, Cineversity Live, and a Wiki knowledge base to name a few. Hundreds of tutorial videos are available for free, with benefits for paid membership including access to the aforementioned 2,000 training videos, bi-weekly Cineversity Live presentations, and a question and answer forum. Paid membership is available at $295 US, and could prove a smart investment for those committed to learning and self-development in 3D.

Cineversity offers nearly 2,000 CINEMA 4D training videos from some of the world's best teachers

USC gets a mocap overhaul

The University of Southern California partners with Vicon to give vital industry experience

The 46-camera stage enables students to learn at the cutting-edge

Vicon, known for its industry standard motion-capture and 3D tracking technologies, has collaborated with the USC School of Cinematic Arts to help deliver a new 1,700 square foot, 46-camera motion-capture stage. This system, a serious upgrade from the previous installation in 2006, aims to expose students to the absolute best in cutting-edge technology. This enables students to gain experience using systems and an understanding of tools that they will invariably be required to have upon finishing their course and entering the industry. The USC expresses that this new mocap system should be used as yet another tool in the filmmaker's arsenal, rather than just another tool to be solely relied upon.

Software shorts

Bringing you the lowdown on product updates and launches

HDR Light Studio 3 Pro

This innovative lighting design tool reaches version 3 with a mass of new features including the LiveLight engine, new colour and blending modes, alongside updated support for KeyShot and Maxwell Renderers. Priced at £399/£599 for standard or pro-versions, it's available now from www.hdrlightstudio.com.

SolidRocks 0.99.4

This highly customisable 3ds Max/V-Ray render plug-in offers an excellent solution for users wanting fast, high-quality results from V-Ray, without spending hours in setup. SolidRocks achieves credible results using all of the standard rendering/GI methods (inc universal) in a fraction of the time. Priced at €54, it's available from http://solidrocks.subburb.com.

Vue 10 Linux Nodes

Vue 10 is now available as a Linux render node, offering maximum performance at a fraction of the cost of a full licence, retailing at $300 US. Current adopters include VFX giant DreamWorks, with more expected to follow after several years of consistent demand. Details can be found at www.e-onsoftware.com/vue.

Insightful snippets

The Next Gen report on UK computer education spurs state response on reforms

Secretary of State Michael Gove's recent speech on the IT education reforms has been welcomed by Ian Livingstone OBE, co-founder of the Next Gen Skills initiative: "It's time for a restart to recapture that thirst for computing which started in the Eighties and lead to the UK being a market leader in computing, before the education system lost its way with office-based ICT," Livingstone is quoted as saying. "Working with the government, I am sure industry and educators can rise to the challenge to make computer science exciting again for a whole new generation of children, so they learn the skills they need and employers want, equipping them for fulfilling careers in the digital age."

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A look to the future

3D printing goes medical

A British woman recently sparked a great deal of global interest following what is believed to be the first ever use of a 3D-printed replacement bone in transplant surgery. The replacement lower jaw, which was printed using incredibly thin applications of titanium and subsequently given a bio-ceramic coating, was fitted by surgeons in little over four hours – a fifth of the time usually required for such a complex reconstructive procedure.

While this may bring questions about the nature of the ever-nearing *Minority Report*-esque future, technicians believe that this surgery may pave the way for more of its kind. The technology could be developed to use a solely ceramic-printed framework to promote bone regeneration around it.

© Layerwise

The replacement jawbone weighs little more than the original, at just 107g

New tools

Datacolor's latest Spyder4 colour calibration device

Colour calibration is important for any creative professional, with no two displays ever exhibiting the same colour right out of the box. Datacolor's Spyder4 range aims to make this process as quick and easy as possible, offering advanced colourimeters able to calibrate all kinds of monitors, laptops, projectors, TVs, iPads and even iPhones.

The Spyder4 range comes in three models: Express, Pro, and Elite. All three models are priced competitively between £99.99 and £179.99. Check out our review on page 94 for more information.

With the Spyder4 range your display is calibrated to be as accurate and consistent as possible

Opinion column

Game on!

Your next VFX job just might be a game

Steve is a 20-year feature film VFX compositing veteran turned master trainer for NUKE compositing

Steve Wright www.swdfx.com

"World-class visual effects are rapidly migrating from feature films to videogames as gaming ratchets up its quality and complexity. We all know that *Harry Potter and the Deathly Hallows: Part 2* is the current record holder for fastest-selling film at $169 million its first weekend. You may not know that *Harry Potter* was crushed like a bug by the release of *Call of Duty: Modern Warfare 3* (Activision) just this last November with sales of $750 million in its first five days.

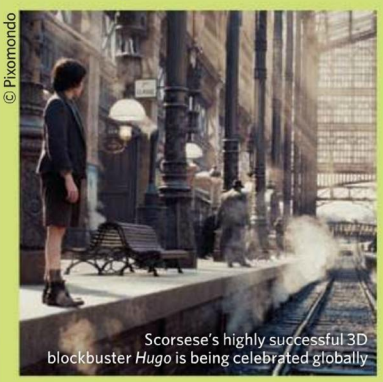
"Videogaming is a very rich business. The global videogame market is estimated at $56 billion, which is twice the recorded music industry and nearly 60 per cent of the feature film industry, including DVD sales. Not only are successful games huge money-makers, but many are then turned into feature films. Just a few of the videogame titles that have made it to the big-screen are *Lara Croft: Tomb Raider* (2001), *Resident Evil* (2002) and more recently the successful blockbuster *Prince of Persia: The Sands of Time* (2010).

"Videogame development costs on average $10 million a game with blockbusters costing as much as $50 million – and rising at a frightening rate. But if a $50 million game can earn $500 million then be turned into a movie and earn another $300 million, the return on investment is huge. So, if you are a talented visual effects artist looking for his (or her) next gig, and finding that the pickings are slim, think about videogames. They have lots of money – and the jobs go where the money is."

> "Harry Potter was crushed like a bug by the release of Call of Duty: Modern Warfare 3"

Congratulations to...

Pixomondo's work on Hugo is celebrated with BAFTA, Academy and VES award wins



© Pixomondo

Scorsese's highly successful 3D blockbuster *Hugo* is being celebrated globally

Congratulations are in order for VFX giant Pixomondo, following multiple awards for its work on Martin Scorsese's latest 3D blockbuster, *Hugo*. The picture has picked up awards from a number of highly respected bodies, the most notable being the prestigious Best VFX Academy Award – a first for Pixomondo.

Hugo has been commended as an international success from a VFX standpoint, with ten of Pixomondo's 11 global facilities working to bring Scorsese's artistic vision to life around the clock.

ArtVPS Shaderlight 2.1

A new launch accelerates the race toward photorealism in SketchUp

Shaderlight is paving the way towards incredibly easy SketchUp renders with very little time outlay

© Shaderlight

This new Shaderlight rendering plug-in for SketchUp is a significant update, which includes an enhanced, realistic lighting library following ArtVPS's partnership with architectural lighting manufacturer Visa Lighting. This means that both models and IES lighting patterns are available in this update.

Rendering performance has also been overhauled; previous complications, such as portal lights causing noisy interior images, have been completely resolved in this release. There is also an added Autosave function in place to avoid the suffering caused by accidental closure or crashing of Shaderlight.

Shaderlight 2.1 is available now as a free upgrade to version 2 owners, or can be purchased at $299 US from www.artvps.com.

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Project Focus

VRZ 1

Vorwaertz designs a track bike using an innovative workflow involving 3D printing technology

VORWAERTZ

Project VRZ 1
Description VRZ 1 is a track bike that incorporates 3D-printed stainless steel lugs glued together with carbon fibre tubes, enabling custom-built frames to be produced rapidly. Simply change the geometry and the lugs are generated by the software ready for 3D printing. Simply genius.
Client N/A
Country Germany
Software Rhino, Grasshopper
Company Vorwaertz sets the bar high, reaching for exceptional standards in design with ideas that are both innovative and unpredictable. Using the latest technologies for extraordinary solutions, the company's impressive product range offers an exciting taste of what's to come from these serious forward thinkers!
Website www.concept-laser.de, www.carbon-werke.de, www.vorwaertz.com

Product designer Ralf Holleis was blown away when he discovered 3D printing technology, and immediately started saving his pennies to spend on 3D-printed parts. He was hooked on the method no time. "I needed to have one of these low-budget printers, so I started building one," Holleis says. "I really enjoyed building [it] – it's like building a LEGO car as a kid, which feels so good when it works at the end."

For Holleis, who studied product design for four years before going on to design kitchen products, toys, accessories, and furniture, 3D printing revolutionised the way he works. "[It] totally changed my way of thinking, as well as my design process," he says. "It's amazing how it's now possible to produce extremely complex parts, which could never have been produced before!"

Since an athlete's track bike needs to fit their body perfectly, every bike is different. The angle of the lugs and the tube length describe the geometry of a bike, so with the VRZ 1 Holleis used Rhino to model lugs that would have been impossible using traditional methods. "There are two major types of lugs: stamped and investment cast lugs," he explains. "Both are quite complicated to produce, and undercuts aren't possible. With 3D printing, you can get every angle you'll need – undercuts are no problem, and it's much faster."

To make a lugged steel frame, building your own lugs from scratch, it could potentially take up to or even over a month. With a LaserCUSING machine working overnight, you can do it in a day. The lugs are then printed on the M1 printer at Concept Laser using a stainless steel powder (CL 20ES). "On this machine you can print stainless aluminium or titanium," Holleis explains. "With the CL 20ES material you can have layer thicknesses from 20 to 100 µm (microns)." Holleis is currently working on the VRZ 2 – visit www.vorwaertz.com for updates.

> "With 3D printing, you can get every angle you'll need – undercuts are no problem, and it's much faster"
>
> **Ralf Holleis,** product designer

A

B

C

D

E

A Holleis tells us that the material density of stainless steel through LaserCUSING is much better than cast steel

B The entire lug set can be printed in 15 hours; they then need to be finished and bonded to the carbon tubes

C The frame can be produced in just one day, because the LaserCUSING machine works overnight

D Holleis uses the Grasshopper plug-in for Rhino to change the frame geometry, which also changes the lugs

E With so many materials now available, Holleis can't wait for the future to bring a vinyl printer, to print the latest LPs

Contributors

Ralf Holleis
Product designer

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Studio Access

John Carter

London's Cinesite creates airships and armies, cities and sanctuaries for Disney's sci-fi epic

CINESITE
A KODAK COMPANY

Cinesite is one of the largest and most creative visual effects companies in Europe. Established in 1991, headquartered in London and with facilities in Los Angeles, the company has the capacity and creativity to produce all manner of digital effects for feature films and TV shows of all scales. An award-winning team of highly talented visual effects artists take filmmakers' ideas and turn them into spectacular cinematic reality

www.cinesite.com

Project *John Carter*
Description Transplanted to Mars, John Carter is a veteran of the American Civil War who discovers a world of moving cities, airships, priests of strange gods and their stranger powers. Finding himself a prisoner of gigantic barbarian creatures, he escapes, only to encounter a princess who is in desperate need of a saviour
Country USA
Client Walt Disney Pictures
Director Andrew Stanton
Software used Maya, NUKE, Houdini, Massive, Photoshop, MARI, Mudbox, PFTrack, 3D-Equalizer, RenderMan

Contributors

Sue Rowe
Senior visual effects supervisor
Jon Neill
Visual effects supervisor on Zodanga
Christian Irles
Visual effects supervisor on Helium
Simon Stanley-Clamp
Visual effects supervisor on Thern Sanctuary
Ben Shepherd
Visual effects supervisor on the air battles
Artemis Oikonomopoulou
3D supervisor

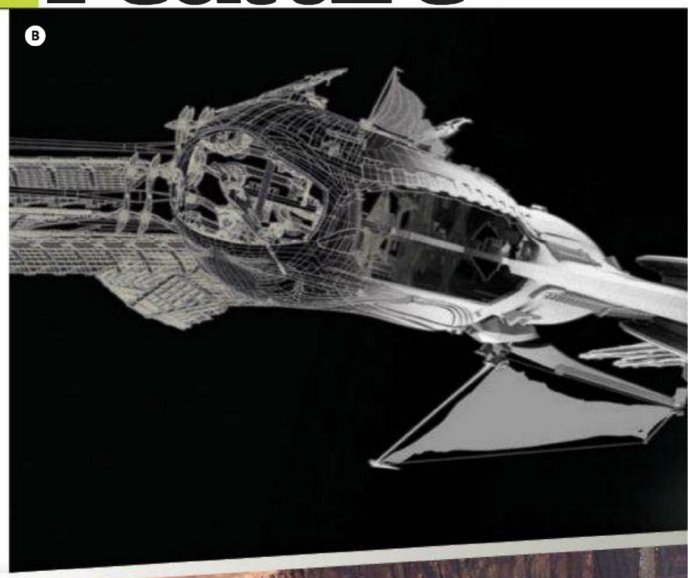
In a mammoth effort for Disney's *John Carter*, a 310-strong team at Cinesite delivered over 830 VFX shots, including 1,973 individual CGI models. This enormous amount of effects shots was subdivided into separate environments, each with a dedicated VFX supervisor, under the overall control of senior visual effects supervisor Sue Rowe.

Ben Shepherd, for example, oversaw a huge aerial conflict of solar-powered vehicles with wingspans of hundreds of feet – a battle between the forces of the cities of Helium and Zodanga. Airships were created using a combination of interior green-screen composites, with CG ship deck extensions, CG wings for ships and digital matte painting backgrounds.

Like many of *John Carter*'s crowd scenes, the 70-strong crew of the airships were generated using Massive software, with digital actors based on specific motion-captured actions and textured to suit the environment. Zodanga, described by Rowe as looking "like an oil tanker with hundreds of legs", is actually a mile-long mass of moving militaristic aggression. Created using Maya, the Zodanga environment had to encompass building a full-size city model for wide shots, and also detailed areas to be seen in close-ups. VFX supervisor Jon Neill's team gave textures, surfaces and edges a dirty, industrial feel using a combination of bespoke shaders, Photoshop, MARI and Mudbox. "The main challenge is just getting enough variety," says Rowe. "It's so easy in the CG world to apply a texture. But you can't just wallpaper a city using the same decorative panel again and again. And to look real it has to have human scale, so we'd always say never make a panel bigger than a human could conceivably work with." The city moves also, so that had to be considered with many shots, while animating the propulsion system had its own challenges. "Each leg had to have an interaction and a cycle as it travels," says Rowe. "Andrew [the director] wanted it to be like a centipede as it moves over the surface. So we had to do quite complex rigging and technical work on that."

Helium City is the opponent and elemental opposite of Zodanga, with 346 structures for Cinesite to create, including a huge glass palace. Due to the sheer volume of assets needed, Cinesite had to develop a proprietary hierarchical caching system. "This allowed us to group and duplicate individual models within larger structures and so [we] were able to work more efficiently in terms of time and file sizes," says VFX supervisor on Helium, Christian Irles. "Each asset also had its own lighting and

> "We had to make sure that our first animation iteration was as close to what we wanted [as possible], because from that point it would take a few days until we saw it in lighting" **Artemis Oikonomopoulou,** 3D supervisor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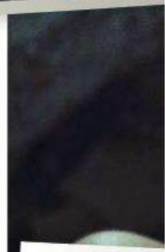

portfolio highlights

Here are some of the big-budget movie projects Cinesite has worked on:

A

2011 *Harry Potter and The Deathly Hallows Part 2*
2011 *X-Men: First Class*
2011 *Pirates of the Caribbean: On Stranger Tides*
2011 *Battle: Los Angeles*
2010 *Harry Potter and the Deathly Hallows Part 1*
2010 *The Chronicles of Narnia: The Voyage of the Dawn Treader*
2010 *Marmaduke*
2010 *Prince of Persia: The Sands of Time*
2010 *Clash of the Titans*

A A partial set was created for the bridge/cockpit and one deck of a single ship. This was LIDAR scanned and photographed for point of reference and re-created

B For the aerial battle, Ben Shepherd and his team had to create models of giant airships for close-proximity shots with a high and complex level of detail

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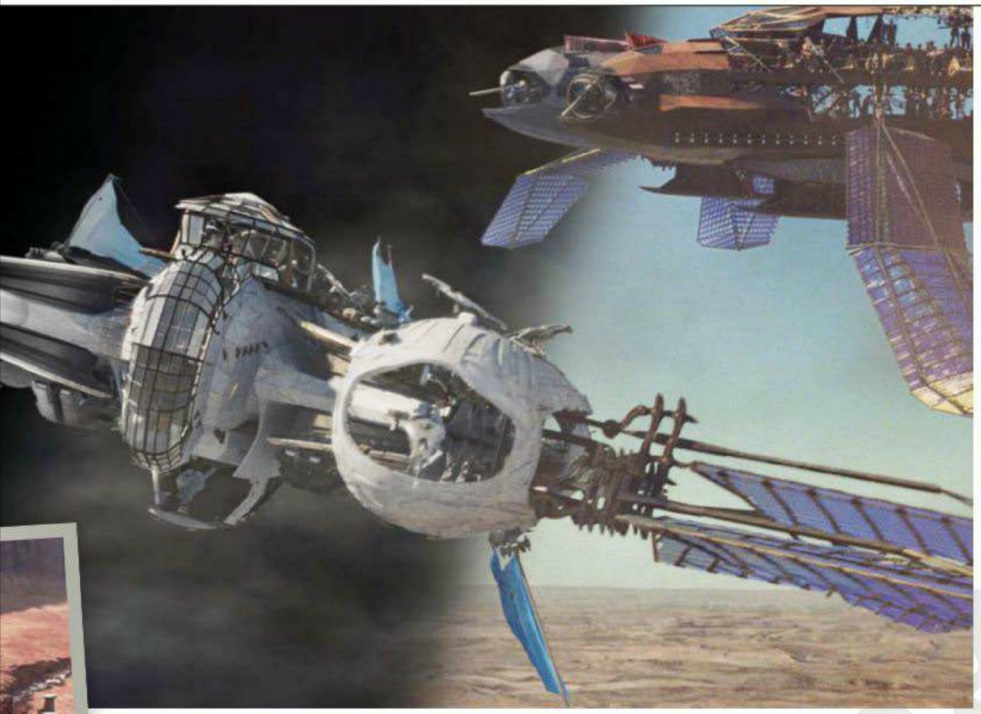
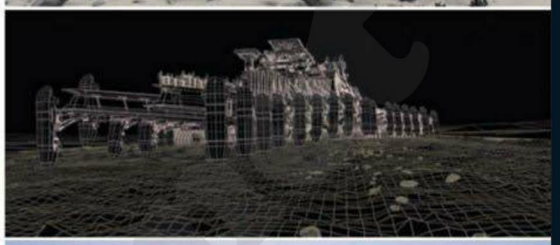
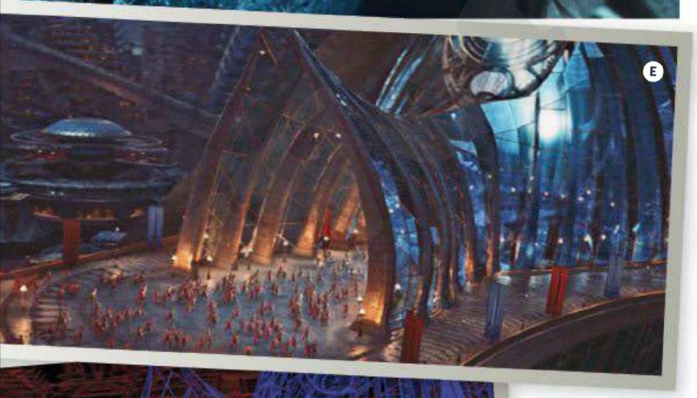
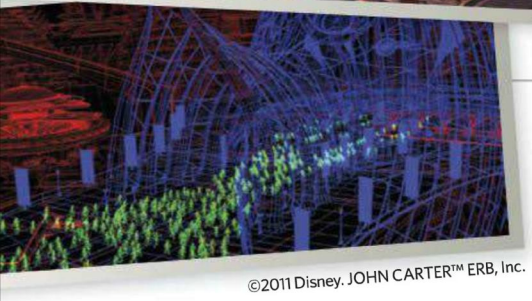




shading file, which would be easily adjustable even from the top node of the hierarchy. We also developed level of detail files for modelling and texturing, which could be manually adjusted or calculated automatically through a shot camera."

The Thern Sanctuary environment – and several other places in the movie – features a Thern effect, overseen by VFX supervisor Simon Stanley-Clamp. This is essentially a living matrix of fibre-optic strands that glow and grow organically. Using Maya, Houdini and custom software developed in-house, it took a full year of development time to evolve the Thern generation system. 3D supervisor Artemis Oikonomopoulou was a key part of this team. "The thing that took the longest time was the caching – up to four days in places," she explains. "We had to make sure that our first animation iteration was as close to what we wanted, because from that point it would take a few days until we saw it in lighting. So we developed a way of viewing it as wireframe animation, to make sure that was absolutely perfect, then moved on to the caching and rendering stage." Oikonomopoulou adds: "We had to find a way of keeping the essence of the Thern Sanctuary through the other forms that it manifests. So we had to keep that colour scheme and the same animating idea and those elements across the different forms. For example, for the use of Thern as a weapon we added more volumetrics, but it was [in effect] the same idea."





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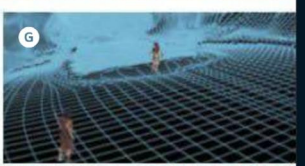

C A selection of photogrammetry projections were created for the terrain of Helium, based on LIDAR scans, GPS data as well as high-resolution stills

D The Thern attacks John Carter (Taylor Kitsch). R&D on the Thern effect, used in several forms throughout the film, took the team a full year to perfect and adapt

E The glass palace of Helium needed to be able to be viewed from the exterior as full CG. It was also used as a set extension for live-action interior shots when needed

F The 674 legs of the moving city of Zodanga were animated using lots of timed animation caches, rather than individually. Secondary animation such as cabling was added in the later stages

G The Thern Sanctuary on Barsoom. Cinesite created the organic fibre-optic look of the Thern. The visuals had to feature a motif that would carry across all forms of the Thern

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Industry insider

Simon Blanc

Scene assembler

We get a glimpse behind the scenes at the award-winning visual effects, animation and design studio, Blur

© Simon Blanc

© Goldfish Crackers. Used with permission from Blur Studio

About the insider

Job Scene assembler, Blur Studio

Location California, USA

Education Digital direction diploma, Supinfocom, France

Company website www.simonblanc.com

Biography Simon grew up in the mountains of southern France, where a passion for drawing led him to study visual communication at school, learning everything from web design to print. Going on to study at the prestigious Supinfocom in Arles, France, where he laid the foundations of his 3D and creative direction skills, he discovered the work of Blur Studio... Five years on, he's living the dream in California.

© Simon Blanc

Make time for your art

Simon explains why it's vital to keep his creative mind active

"The way I need to create could be compared to a sickness," Simon says, laughing. "Personal creation isn't work for me, it's my lifeline. Nothing beats making your own art, having total control over what you do, doing it just because you feel the urge to. It's my way to express myself!"

Several years ago, Simon Blanc wowed the 3D community with the stunning collaborative short film project, 'Moutons', as he emerged from the French film school Supinfocom with a diploma in Digital Direction. It was right then that he discovered California-based Blur Studio's 'Gopher Broke' and 'In the Rough' shorts, encouraging him to apply for a job with the studio as soon as he graduated. "I got lucky... they replied pretty fast – and positively," Simon explains. "Then we had to enter the visa process and wait for around a year... as soon as I received the visa approval I jumped on a plane and here I am, four years later!"

Currently working as a scene assembler, which Simon says is a funny name, he gets involved with a wide range of activities, starting with environment modelling, texturing, shading and lighting look-development. "On each project, every scene assembler will get to do the final lighting and compositing of a few shots," Simon adds. "Props modelling is also part of the job, which makes it very flexible, as you often change the type of tasks." We find out what it's like working in LA on some of the most prestigious game cinematics, trailers and commercials.

3D Artist: *Tell us about the Blur experience. What's the vibe like at the studio?*
Simon Blanc: Blur is a fast-moving, fast-evolving studio. There have been huge changes since I've been here; the pipeline – thanks to our excellent team of programmers – keeps evolving, allowing us to do an extraordinary amount of work in a very short time.

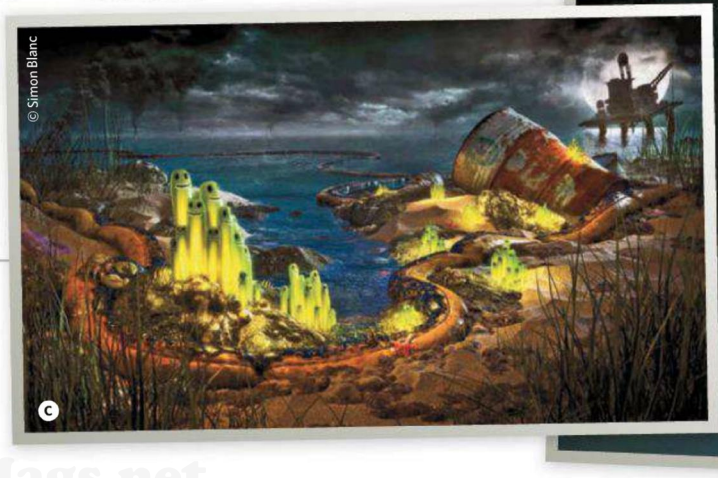
The vibe here is really based on the energy people bring by having fun doing great work at a fast pace. Having everybody in a huge open room makes communication very easy, and brings a sense of [us] all being in the same boat!

3DA: *How did Blur change your world?*
SB: I have to say I had a ton of things to learn when I came to Blur [laughs]. I was confident that I could do it, but it took me a lot of work at the beginning to learn how to do things fast and work intelligently. Working at Blur really made me grow as a professional.

3DA: *How quickly do projects turn around, and how do you keep up?*
SB: Projects usually stay in the studio for a few months, from concept to final product, depending on their size. Some TV commercials, like the Goldfish Crackers campaign, can last as long as a year [if they are] multiple episodes. There's something really exciting about making a lot of different projects in a year, but it would not be that fun without the awesome pipeline we've built. It allows departments to kick out the work really fast while staying very organic and allowing changes to be made at any point, on anything!

3DA: *With technology ever-changing, how do you keep your skills on form?*
SB: I try not to worry too much about the flow of new software that comes out each year. Tools are tools, and it's never been an issue for me to learn new ones – even better, it's always exiting to learn new things! At Blur we've changed our way of rendering three times, for instance, starting with Brazil renderer, then we switched to mental ray, to end up since last year using V-Ray. But fundamentally nothing really changed. Lighting is still lighting, no matter which renderer you [choose to] use.

I think the most important thing is to learn how to get better artistically, always try to push your own limits. Software is just an interface – your brain is what matters!


© Simon Blanc

Portfolio highlights

Some recent features that Simon Blanc has worked on:

2006 *'Moutons', graduate film*
2006 Nouky, *children's DVD*
2007 Alfredo, *Disney series*
2007 *Actimel, advertising campaign*
2008 Warhammer Online, *trailer*
2010 Fable II/III, *cinematics*
2010 Batman: Arkham Asylum, *game trailer*
2009-2011 Goldfish Crackers, *series of commercials*
2010 BioShock 2, *game trailer*
2012 Far Cry 3, *game trailer*

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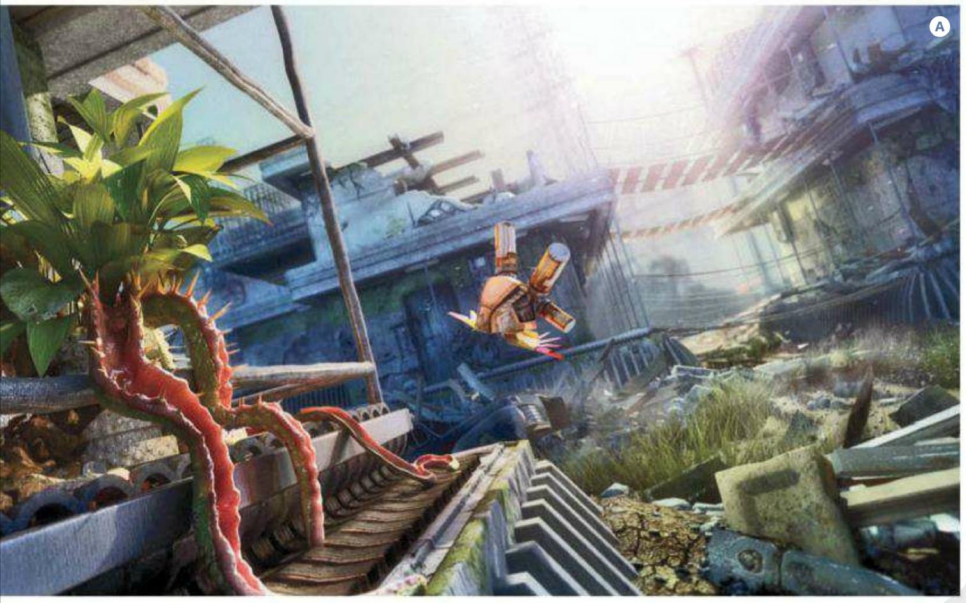
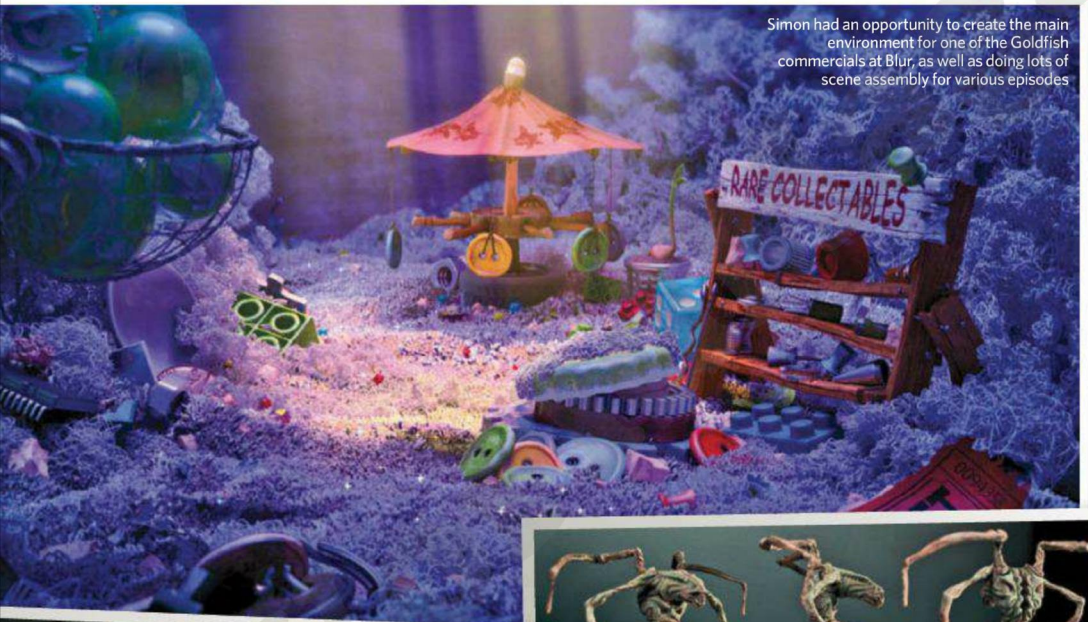
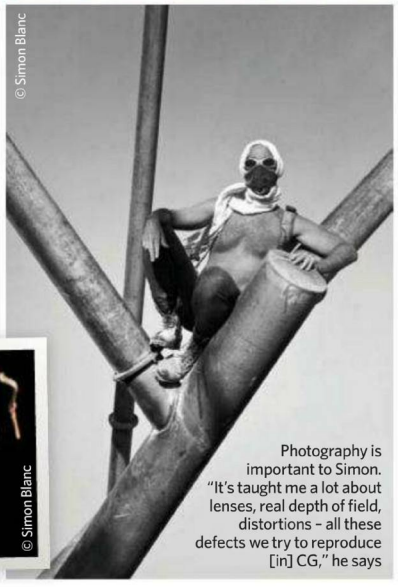


Simon had an opportunity to create the main environment for one of the Goldfish commercials at Blur, as well as doing lots of scene assembly for various episodes





Photography is important to Simon. "It's taught me a lot about lenses, real depth of field, distortions – all these defects we try to reproduce [in] CG," he says

"It took me a lot of work at the beginning to learn how to do things fast and work intelligently. Working at Blur really made me grow"

A Photography has helped Simon train his eye to learn about framing, lighting and composition: "You also get faster at seeing things that work and don't work in a frame," he says

B Simon also explores the art of knife making: "Photography is about life, the present, spontaneity... while knife making is focused on design... and connects me to the past"

C Created while the BP oil spill was devastating Mexico, Simon found the sad news drove him to create a meaningful artwork to make sense of his sorrow

D Simon worked on all of the interview shots of the hero character in the incredible *Overstrike* game trailer. The four-player co-op game is due for release this summer

E This ZBrush character was completed in two days, modelled from ZSpheres. Created in 2008, Simon used Photoshop to texture and rendered in mental ray

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The best courses and freshest talent from around the globe...

Motion Design

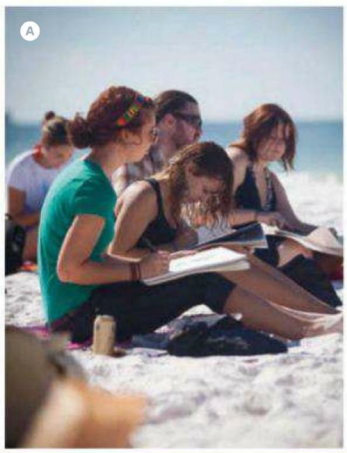
Ringling College's forward-thinking course is one of the first to shed light on the invisible art of Motion Design

What is Motion Design? For Ringling College Of Art And Design, it exists anywhere there is a screen. You see it every day, but you probably didn't know it had a name. You see it when you go to the movies, or watch TV, or surf the web, or even go shopping. It is the mysterious title sequence that sets the mood for the latest sci-fi movie. It's the beautifully animated graphics that introduce the events for the Olympic Games. It's the fresh interface on that website that you use to make your own snowboard designs. Anywhere there is a screen, you're probably seeing the creative work called Motion Design.

A brand new program of the same name, and only three years old, Motion Design is different from computer animation in that it doesn't focus on character animation to tell stories, but rather focuses on the use of type, photography, video, 2D elements and 3D objects to communicate messages. Often, students will incorporate the use of many different image-creation techniques all on the same project.

During the four-year course, students will explore the unique characteristics of the moving image, from the principles of graphic design through to animation, video and audio editing. Students will also work with peers from other departments, such as Advertising, Digital Filmmaking and Graphic and Interactive Communication. "Choosing Motion Design has been by far the best decision I have made regarding my future," says second-year student Marissa Fernandez. "Although a very challenging major, it has pushed me to find... alternative solutions to one single problem. Not only are we prepared to be creative directors, but also illustrators, graphic designers, and finally the art directors of our own projects."

Students who successfully complete the Motion Design program will be able to deliver conceptually capable, well-designed work; possess a strong, multi-disciplinary knowledge of the different facets that make up motion design; and be prepared to take on the ever-evolving roles in visual information and communication businesses. Although a relatively young industry, Motion Design is growing fast alongside the evolution of interactive television, tablet devices and ever-ubiquitous advertising, offering careers as challenging as they are creative. Ringling College is one of the few institutions with the faculty and facilities necessary for the long and rewarding path towards this emerging subset of graphic design.



Ringling facts

- Ringling College of Art and Design was founded in 1931 by art collector, real estate magnate, and circus impresario John Ringling
- The 48-acre campus includes more than 111 buildings, enrols 1,368 students from 46 countries, and employs 150 faculty members
- Each year since 2006, incoming first-year students have received a brand-new MacBook, fully loaded with licensed software
- Cartoon Network, CNN, Disney, Electronic Arts, Sony Pictures Imageworks, ESPN and Universal Studios are among visiting recruiters

> "Students learn a variety of techniques from traditional animation, stop motion, 2D, 3D and compositing... and choose between them to best help... strengthen their concepts"
>
> **Ed Cheetham,** program coordinator

Ringling College of Art + Design

A "We do have... workshops on the beach," says the program coordinator Ed Cheetham. "It's a great way to break out of creative ruts"

B "The variety of art and design that is taught was the reason I chose this major," student Klarissa Parduba says

Course details

Name Motion Design
Length Four years
Website www.ringling.edu/learn/majors/motion-design
Fees Tuition for academic year 2011-12 is $32,280 US Fees are based on year of attendance and major
Entry requirements www.ringling.edu/admissions-financial-aid/admissions/requirements-portfolio
For admissions to Motion Design, the Admissions Committee reviews portfolios in the context of the major. Although recommended, examples of drawing are not required. You may include work in any media – including class assignments, design projects, logos, flyers, websites, photography, film, QuickTime movies, drafting and multimedia. The work may be created by hand or digitally, but must be original.

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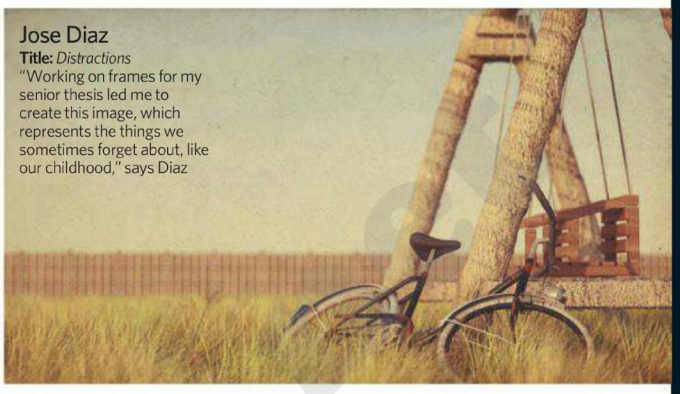
STUDENT GALLERY

We take a look at a variety of student projects from the Motion Design course, from film festival trailers through to fake TV station identities

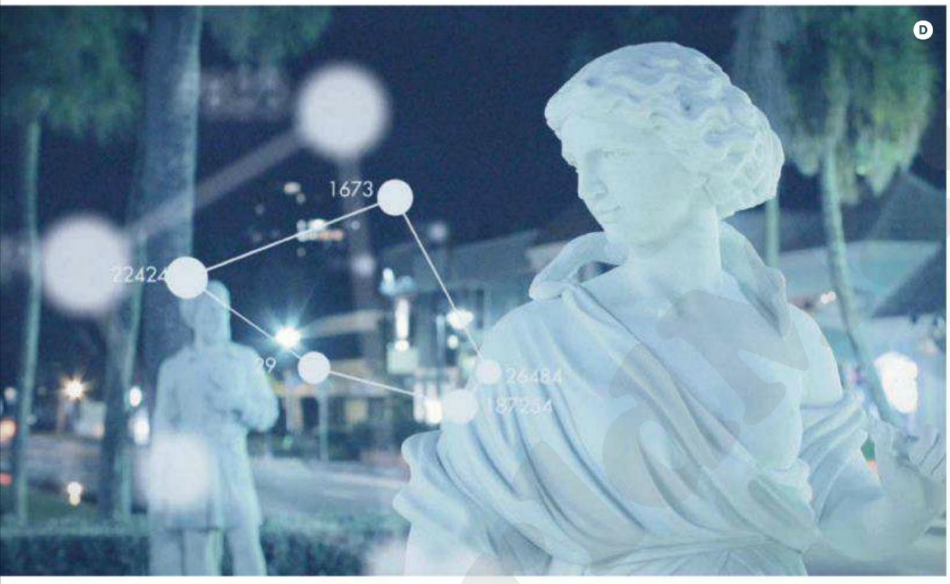
C



Jose Diaz

Title: *Distractions*

"Working on frames for my senior thesis led me to create this image, which represents the things we sometimes forget about, like our childhood," says Diaz



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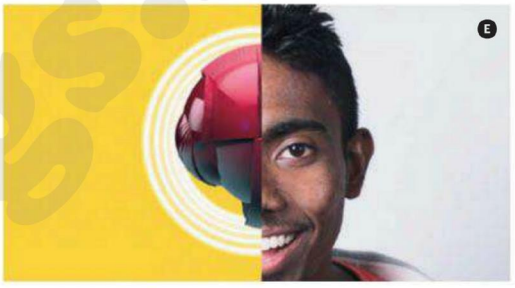

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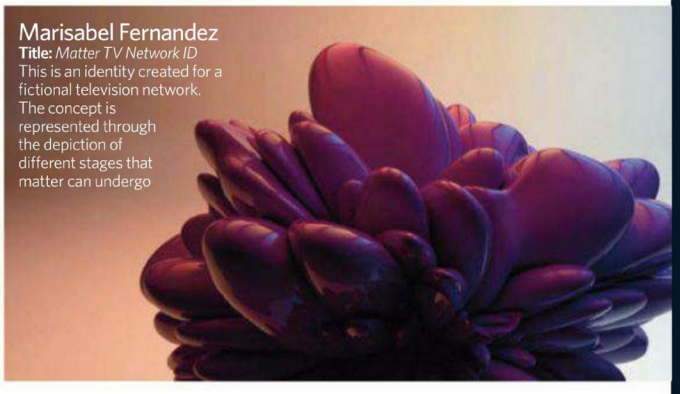

Marisabel Fernandez

Title: *Matter TV Network ID*

This is an identity created for a fictional television network. The concept is represented through the depiction of different stages that matter can undergo

C Hunter Thompson, Riko Cribbs
Title: 'Impossible Realities' – Sarasota Film Festival Trailer
"The animation here expresses the malleability of filmmaking and its ability to explore innumerable worlds; turning the impossible into a reality," says the project's creator

D Jose Diaz, Andrew Schoneweis
Title: 'What You Will See' – Sarasota Film Festival Trailer
"We shot all of the footage around Sarasota, FL with a Canon T2i. We then used CINEMA 4D to create the graphics and composited... in After Effects," says the trailer's creator

E Mauroof Ahmed, Jose Diaz, Andrew Schoneweis, Jacob Duval
Title: 'Day In The Life' Motion Design
This is one frame from a 15-second show opening title sequence. The full animation represents the evolution of an idea from the point of view of a motion designer

F Thomas Eyester
Title: *Scientist*
Motion Design teaches multiple disciplines, many of which have gone into creating the character and environment seen in this piece

G Aaron Goldberg, Katherine McGee Russell, Randall Johnson, Sasha Sickles
Title: 'Once Upon A Dorito'
This frame comes from a 30-second commercial created for the Doritos Crash The Superbowl contest. It was a team effort with students from Motion Design and Advertising Design

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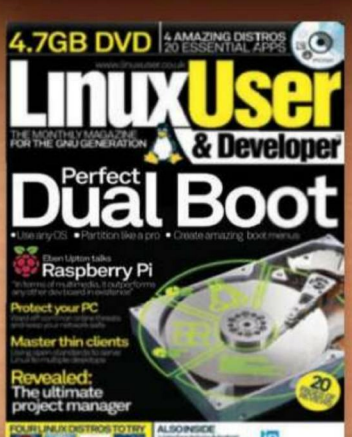

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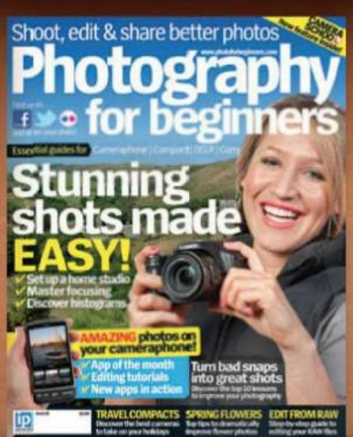
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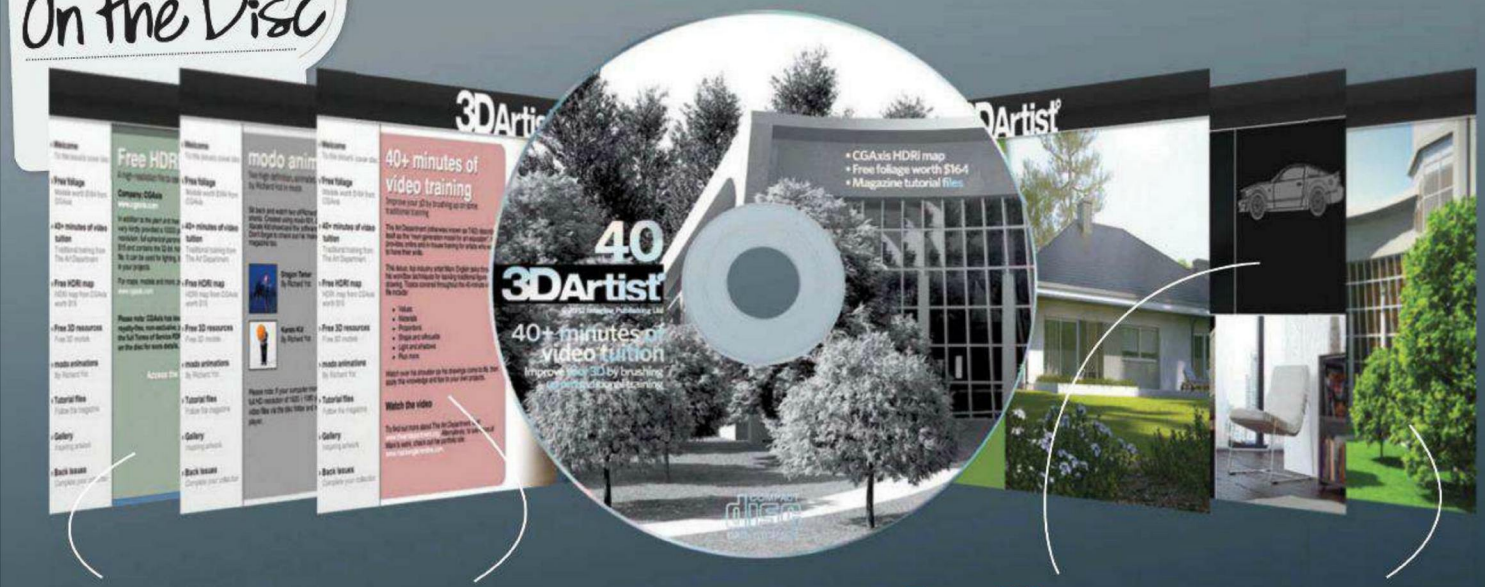


HDRi map
High-resolution file from CGAxis

40+ minutes of video training
Traditional techniques from The Art Department

Free 3DOcean models
Assets worth $97

Free foliage
Trees and plants worth $164

On the free disc

This issue's disc includes over 40 minutes of video training from The Art Department, models worth over $261 and a high-res, panoramic HDRi

All the files you need to follow the 3D Artist workshops

Tutorial files

This issue Lech Sokolowski has included all the building plans, helpful modelling scripts and a finished model from Part One of his Build a House tutorial. Richard Yot has also included two finished animated shorts – find out how they were made over on page 62.

40+ minutes of video training

Improve your 3D by brushing up on traditional training

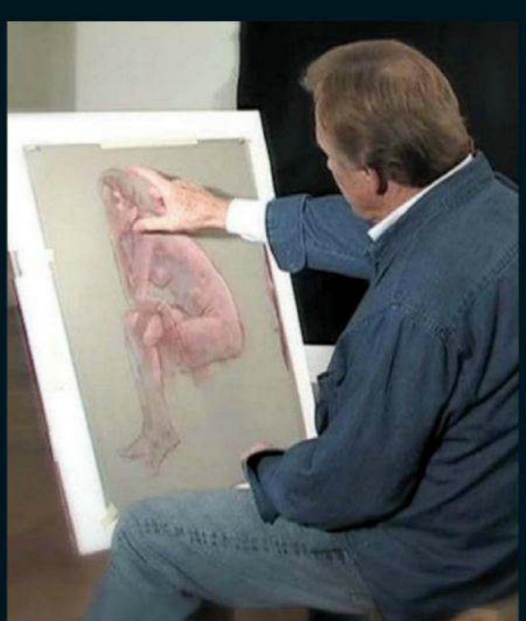
The Art Department (otherwise known as TAD) describes itself as the "next-generation model for art education". It provides online and in-house training for artists who want to hone their skills.

This issue, top industry artist Mark English talks through his workflow techniques for tackling traditional figure drawing. Topics covered throughout the 40-minute video file include:

- Values
- Materials
- Proportions
- Shape and silhouette
- Light and shadows

Watch over his shoulder as his drawings come to life, then apply the knowledge and tips you learn to your own projects.

To find out more about The Art Department, visit www.theartdepartment.org. Alternatively, to see more of Mark's work, check out his portfolio site: www.markenglishonline.com.



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Free foliage worth $164

Enhance your scenes with this selection of models

CGAxis.com is an online retailer of 3D resources that delivers high-quality, photorealistic models and textures in a range of file types for CG visualisations, animations, games and more.

This issue we've got a collection of nine plant and tree models to use in your projects, worth a combined $164. There are four garden plants, plus five trees that you'll find available in the following file formats:

- .max – Scanline
- .max – mental ray
- .max – V-Ray
- .c4d – CINEMA 4D
- .obj
- .fbx
- .c4d – CINEMA 4D V-Ray

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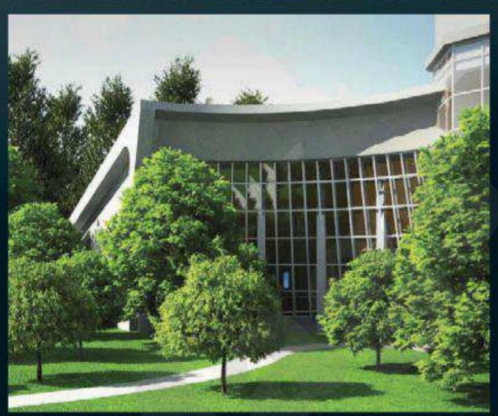


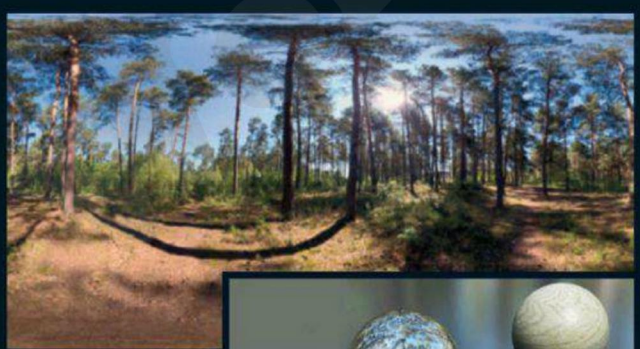
CGAxis HDRi map

A high-resolution file to use in your projects

In addition to the plant and tree models, CGAxis has also very kindly provided us with a 10,000 x 5,000 pixel high-resolution, full spherical panoramic HDRi.

The file is worth $15 and contains the 32-bit HDR file, plus a standard JPEG file. It's perfect for HDR lighting in your 3D software.

For maps, models and more, please visit: www.cgaxis.com.



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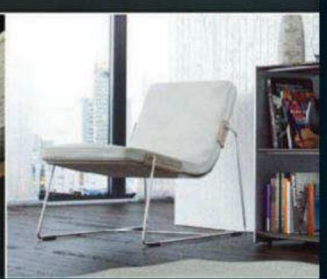

3DOcean models

Furniture and a muscle car worth $97

3DOcean is an Envato marketplace, which enables its users to buy and sell royalty-free 3D models, textures, concepts, materials and shaders. All items are priced on the complexity, quality and use of the file.

This issue we have a lounge chair, office furniture and a Mustang, worth a combined $97 to give away exclusively to **3D Artist** readers. These high-quality models are for personal use only.

To buy and sell more 3D models and accessories, be sure to pay www.3docean.net a visit.

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Packed with 3D assets

Getting started with the CD

Put the disc in the drive to deliver a wealth of 3D goodies to your desktop

Simply insert the disc into the CD drive and the menu will start running. Click Accept on the terms and conditions to progress to the menu itself. You'll find over 40 minutes of video training, tree and plant models worth $164, a HDRi map, plus 3DOcean models, plus more stashed on this free disc.

40+ minutes of video tuition

Along with the six-step tutorial on page 84, you'll find plenty of helpful guidance on figure drawing in Mark English's 40-minute training video. Mark covers a whole range of topics on traditional techniques and methods that will help improve your creative eye.

3DArtist CD
Models, textures and resources for the 3D community
Free with issue forty
Free foliage worth $164
Trees and plants to enhance your scenes
CGAxis HDRi map
A high-resolution, full spherical, panoramic HDRi worth $15
40+ minutes of video tuition
Improve your 3D by brushing up on traditional techniques with The Art Department
Free models from 3DOcean
A lounge chair, Mustang and office furniture worth a combined $97

Tutorial files

Watch two of Richard Yot's animated shorts, created in modo 601, or use Lech Sokolowski's plans, modelling scripts and a finished model to follow the first part of his Master Arch Vis tutorial.

High-quality resources

Freebies this issue include a 40-minute traditional art training video from The Art Department, a HDRi map from CGAxis, plus a selection of furniture and a muscle car from 3DOcean worth $97.

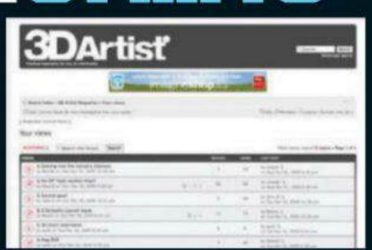
On the Disc

Free foliage worth $164

We have a selection of nine plant and tree models available for all **3D Artist** readers. The set of four plants and five tree species are available in a variety of formats.

3DArtistonline.com

The fun doesn't stop with the magazine! There's the website and gallery for uploading your images and commenting on those of other 3D artists, and there's the forum for all your 3D-related questions, comments, discussions and problems. If you have suggestions for the magazine or just want to comment on each issue, then head over there and say your piece. Remember to sign up and register, then click for the forum to remember you for the next visit and you can post away.



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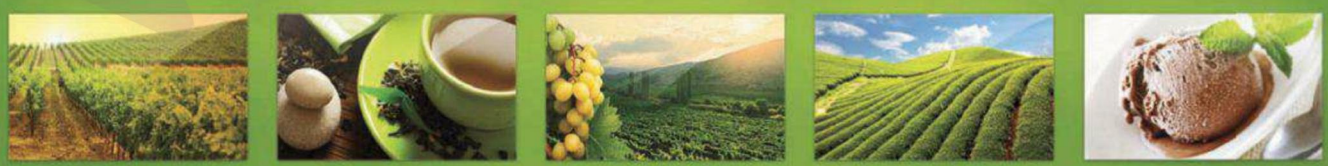

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Owen Cartagena: Student At DAVE

Prior Training: None

Time In School: 2 Weeks

Modeling Time: 4 days

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